COAL AGE

The Only National Paper Devoted to Coal Mining and Coal Marketing

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Analyzing the Economics of the Coal Industry

ANNOUNCEMENT by Secretary Hoover on Dec. 19 that with funds supplied from private sources the President's conference on unemployment is to undertake a comprehensive study of intermittence of employment in the bituminous coal industry is gratifying news. The subject is large, as is indicated by the outline of the field to be covered by the inquiry. No more able, disinterested and at the same time friendly agency for this work could be suggested than the men who with E. E. Hunt are working with Mr. Hoover.

Friends of the coal industry despair at times at the magnitude of the task of both formulating the problems of coal and getting the story before the public in adequate and satisfactory manner. Two years ago the American Institute of Mining Engineers made a study and published a comprehensive study of the irregularity of operations of the bituminous coal industry. The fact was established but the document stands as an engineering report on which the board of directors have not acted. The problem is too complicated for solution by panacea.

Following the engineers' report were the investigations of Senator Frelinghuysen. These in 1919 were not only enlightening but decidedly helpful, but the history of 1920 indicates that the Senator not only failed to convince his colleagues on the real situation but fell short in his own education as well. The hearings conducted by Senators Calder and LaFollette were without fruit because conceived in distrust and outright ill-temper. They served only to inflame the public, without truly informing.

The Survey of Waste in Industry by the American Engineering Council of the Federated Engineering Societies planned to include coal in its program, but the subject was dropped from the list in the final report. The President's conference on unemployment failed to bring forth an agreement on coal.

Now, without rush or furor, with funds to do the job thoroughly, the permanent committee retained by Mr. Hoover to carry to fruition his plans for the betterment of conditions of employment in industry is to study coal. The outline of what this committee will examine reads like the synopsis of a treatise on the economics of the coal industry. Such a monograph has never been written; there is real need for it. Every opportunity should be offered, every facility advanced, every bit of information and guidance proffered by the men in the coal industry to forward the early but unhurried completion of this report.

A not to be overlooked point is the power of Mr. Hoover's name in eventually obtaining wide and favorable publicity for the finding and conclusions of Mr. Hunt and his colleagues. The objects of the original unemployment conference were attained—fair presentation of facts honestly arrived at—by the sheer power of publicity. The forthcoming report on the coal industry we hope, and have every reason to believe, will likewise succeed.

Whistling to Keep Up Courage

MINERS in the anthracite region are enjoying a hard-earned vacation. Save for a very short period early in 1919, when the post-armistice slump in demand closed many mines, and for about six weeks in the summer of 1920, when the miners went on strike, the hard-coal region has worked to capacity without interruption since 1916, or for five years. In round numbers 30,000 of the 145,000 anthracite miners and mine laborers are now idle all or part time. One after another the collieries have been suspending for the past four weeks, as demand for coal has diminished.

Press reports are to the effect that union labor leaders in the region have announced that the operators are closing the mines as a measure to coerce the men into recession from their announced position of having decided to demand a 20-per cent advance in wages next April, when the present contract expires. The assertion is equally absurd and on a par with the union leaders' demand for such or any increase in wages. The operators have already bought and paid for the labor to produce some 5,000,000 or 6,000,000 tons of anthracite valued at $40,000,000 which they are holding in producers' storage. It must be obvious to all that there is a limit both to the storage capacity and the purse of producers. Should the producers throw this coal on the market at greatly reduced prices, pocketing big losses, the result would work more hardship on the miners than good to the public. The retailers' yards are full to overflowing and the householder is buying only to supply his needs from day to day. A cut in prices now, not warranted by reduction in costs—that is, reduction in wages—would throw the market into a turmoil and stop what little buying there is. No one—producer, retailer or householder—would keep on hand a ton of coal not actually needed, and production would soon be halved, with more miners out of work.

The miners must realize that not the operators but the public is demanding that the union leaders permit the men to take reductions in wages next April. They really do know this—they are whistling to keep up their courage, hoping against hope that by demanding more they may be able to hold what they have. It simply cannot be done. As for the miners' asserting that wages can be maintained or even increased and the operators even then have sufficient margin left to lower the price to the consumer, we can but say that it is not so.

The cost of producing anthracite is as variable as the cost of living. No one questions the statistics published by the Federal Trade Commission on the cost of producing anthracite, which covers 1918 as the latest period.

The f.o.b. mine cost in November and December, 1918 (since when there has been a large increase in wages and consequently in costs), ranged from $3 to $11.10 per gross ton for fifty-six independent operators and from $3.73 to $5.82 per gross ton for nine railroad companies, whose output was, roughly, 70 per cent of the total.

Now, obviously, with the maximum difference between high and low of $2.09 per ton in the average mine cost for the nine large companies and with selling prices varying at most but 25c. it is plain to him who would read that either (1) a majority are making scandalous profits, (2) a majority are losing vast sums, or (3) there is a happy medium between these two extremes. The latter is the true state of affairs. One or two companies are making fancy profits, no doubt; a few others are making no profits, doubtless doing little more than covering out of pocket expenses, while in between, the "average" group is on a reasonable basis.

The same is true of the independents. With them there is a maximum variation of $7 in costs of production. Rest assured the fellow who had the $11 per ton cost in 1918 is not working now, nor are some if any of those whose costs three years ago were $6 or more.

Unfortunately we have no comparable general average figures of cost of living and earnings for the anthracite miners and laborers. But we can assume for argument's sake a figure, say $250 per month, as average earnings of miners. Compare the individual with a family of six, a home on which he is making payments, perhaps a jitney, piano and other modern necessities of the well-to-do. Earnings of $250 a month may look small to him; he is a high-cost miner. On the other hand is the single man—no heavy operating costs, just board for one, no heavy overhead because no real estate—he is the low-cost miner. In between is the average. The high-cost miner would like to be earning sufficient for costs and a surplus besides, but when he is idle part time, as today, he must perchance draw on his savings account. The low-cost miner, of course, is and has been making a handsome profit these many years.

The ordinary, inescapable natural laws prevent our forcing him to take a lower wage so long as he does as much work as the man with the big family. And we cannot cut all wages to a level that would permit only the single men to live. Too often the miners shout about the huge profits of one company, saying nothing about the poor relations. Too often in the past the coal operators have told us how many hundreds of dollars the best paid men earn, but nothing about the lowest. We anticipate that there will be no occasion for criticism on that score this year.

A Higher Tariff Under Another Name

IN THE midst of the confusing welter of assertion and denial from those whose interests are affected by the proposed American valuation plan, many are turning to the professional economists for counsel. This group takes a remarkably united and unequivocal stand in opposition to the measure. The grounds upon which they take their stand are, roughly, these:

In the first place, they believe that the proposed plan really means a higher tariff. They recognize that the precise rates to be imposed on the American values are the determining factor here but they are convinced that those urging the plan intend to see to it that the rates shall be sufficiently high to cover any uncertainty incident to the establishment of the new valuation basis. They suspect that at bottom the proposal resolves itself into a demand for a hidden and undetermined amount of increased protection.

The arguments, aside from this, do not impress the economists. The three which contain some modicum of force are that the plan will meet the problem of the fluctuating exchanges, that it will prevent "dumping" and that it will put up a more effective bar against the country with exceptionally low production costs. The economists point out, however, that prices rise in countries whose exchanges fall and that any disparity in the two movements is largely offset by the internal disorganization of the productive forces in the country whose exchanges are violently deranged. "Dumping," they believe, can best be prevented by administrative measures applied when the facts of a particular situation demand them.

On the other hand, the economists are considerably influenced by the contention that the adoption of the proposed plan would introduce so much uncertainty into the process of importing goods as greatly to embarrass the process.

The administrative difficulties of obtaining fair cost figures from American manufacturers interested in excluding their rivals' goods, of determining American costs in the case of goods which America does not make, and of obtaining uniform valuations at various points of entry are perfectly self-evident. Furthermore, it is contrary to all past practice and procedure in this country. It constitutes, in the words of Professor Taussig, the foremost student of the tariff in this country, "a veritable leap into the dark."

After all, however, the opposition of the economist rests back upon his conviction that the proposal is equivalent to a demand for increased rates at a time when the true economic interests of the country would not be served by the establishment of a high tariff wall.

Mining Machines and Coal Exports

GREAT BRITAIN'S evident determination to get back her foreign coal trade leads to the conclusion that she must lower costs by a large increase in the near future in the amount of machinery used for mining coal. It is believed that both operators and labor in England recognize that this step must be taken, and there already is evidence that the purchase of coal-mining machines in unusual numbers is in prospect. Heretofore British mining labor has been very successful in holding to a minimum the amount of machine-mined coal. Under present-day conditions, however, it is recognized that costs of production must be lowered if England is to enjoy anything like her pre-war volume of coal exports. What is being done in this direction is indicated by data published in this issue of COAL AGE. The curve of machine-mined coal in Great Britain is steadily upward. In the eleven years from 1910 to 1920 the proportion of the total so recovered has increased from less than 6 per cent to 13 per cent.

There are now 5,000 mining machines of all types in use in Great Britain's coal mines, compared with some 19,000 in the United States. We have had 5,000 machines in use since 1902, and in 1898 undercut more coal by machine than Great Britain in 1920. But all growth is slow at first and our competitor across the sea is learning from us—with our machines in part.

Unusually High Recovery Obtained by Use of Modified Advance System of Pillar Drawing at Indianola

In One Section of the Mine Short Rooms Are Driven and Break Line Maintained Close to Pillar Faces—Flank Headings Aid in Roof Control—Gob Sections Ventilated by Force and Exhaust Systems

By Alphonse F. Brosky
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THROUGHOUT the greater portion of the northeast panel in the Indianola mine of the Indian Collieries Co., at Indianola, Pa., the butt roadways are driven at unusually short intervals, being separated from each other by an 85-ft. instead of by the 250- to 300-ft. pillar ordinarily provided. Some interesting experiments have been made in this section. The layout of this portion of the mine can be seen in Fig. 1.

A modified "advance system" is being followed in the drawing of pillars. Consequently rooms are driven on only one side of the short butt roadways. These diminutive rooms can be seen on the right of the imaginary line joining *A* and *B*. They are 14 or 16 ft. wide and, of course, are only 85 ft. long. The room pillars are of approximately the same width. This practice of maintaining rooms and pillars of nearly equal dimensions is a wise one and should be more generally followed in this field, as it insures a greater ultimate recovery and provides greater safety in working than could be obtained by ordinary methods. Only a few rooms are to be seen on the map because such openings are not allowed to stand after driving.

Excessive Trackwork an Obvious Drawback

In keeping with the system followed, their starting is purposely delayed until the moment when they can be driven up with the assurance that the break line in its movement will cut them off. As a consequence the pillars can be drawn back immediately, keeping pace with the progress of the break line. Small rooms were driven in the hope that a high percentage of recovery would be afforded. This result was indeed obtained, yet later developments, notably in the southeast panel, have discounted the superiority of the small room, for the recoveries in the respective panels are equal. The great disadvantage of the small room over the large lies in the increase in the length of headings required, with their correspondingly increased track work.

The method of first-mining here followed was planned in the hope that with it the drawing of the pillars would be made safer than when more usual methods are adopted. After a room is started it is worked continuously until finished, its driving being followed immediately by retreat or pillar drawing.

The caved or gob region, as indicated in Fig. 1 by the area *ABC*, is triangular in shape. The hypotenuse *AB* is the line of the working faces of the pillars. In this article it will be spoken of as the break line. The angle made by this line with the main haulage depends entirely upon the widths of the room and pillar employed; the greater these widths the greater the angle *CAB*.

In the mining of the pillar coal on the retreat the room pillars are blocked out by narrow crosscuts which are placed on 8- to 10-ft. centers. The resulting blocks are approximately 4 to 6 ft. wide and 14 to 16 ft. long and with the greater length at right angles to the direction of the length of the room. It must be remembered that the working face of any one pillar cannot be pushed ahead of the break line, and that consequently the advance crosscut in a pillar is adjacent to the block being mined. The blocks are undercut by machines on the end away from the break line but a small stump is left intact near the break line temporarily. This supports the roof. These stumps are approximately 4 ft. square and are mined last, being cut away by hand. Where roof conditions are good, the stumps are completely recovered. It rarely is necessary for the miner to leave them. The greater part of the coal unrecovered is that lying in these small stumps. This pillar-drawing operation is shown in Fig. 2.

Peripheral Headings Aid in Fall of Roof

This method of closely placed butt roadways and short rooms has been adopted in only one of the panels. An even more important modification is the driving of peripheral headings on the flanks of the working section, as indicated by *CB* and *CA* in Fig. 1. These are kept a little in advance of retreating faces and insure a straight break line and an easy fracture.

In Fig. 2 let us assume that the roof falls along the line *AB* and that pillar drawing advances toward *DE*, which line will represent the new break after the area *ABDE* is mined out and the roof allowed to cave. It will be seen that as the robbing advances the roof will be supported along only one edge of the mined area, namely, along *DE*, if the headings *CD* and *CE* have caved so as to free the flanks. Thus a simple shearing stress is brought upon the roof at the break line *DE*. If the headings were not driven, the roof, in addition to being supported along *DE*, would also be supported along *BE* and *AD*. In this case the pressure acting on the roof area *ABDE* would produce a modified shear on the three edges rather than a simple shear on a single edge. The break in such a case would be irregular.

Especially Helpful in Initial Roof Falls

These headings are particularly valuable in starting a break line, as, for instance, in the area *CFG* where the edges *CF* and *CG* approach the edge *FG* in length. As the break line lengthens, the influence of the flank headings decreases. Their effect on the break line *AB* grows less because the ratio of the sum of the distances *AD* and *EB* to *AB* diminishes. The headings nevertheless still retain much value inasmuch as they aid in the drawing of the part of the pillar in their immediate vicinity. They are not timbered, as their real purpose

is to bring down the roof and not to maintain a passageway.

The success attained in this method of working is attributed to : (1) The peripheral headings, which after driving cave and relieve the roof pressure upon the coal; (2) keeping the break lines straight, thus avoiding excessive pressure on any one pillar, yet simultaneously effecting a uniform line of fracture in the roof; (3) maximum production for a given section; (4) the use of bleeders to increase the ventilation in the mined-out area.

Excellent results are achieved by this method of working. No treacherous or unlooked-for roof falls occur, providing, of course, uniform progress is made at the several pillar faces along the break line. To obtain the best results, uniformity should be maintained not only in the pillar retreat but also in the room-and-pillar layout. Odd-sized rooms should be avoided wherever possible. These factors being properly controlled, the roof breaks evenly and at the time expected, so that all manifestations accompanying a roof break are repetitions of those that occurred prior to preceding breaks.

At first thought it might be supposed that this method would encourage squeezes, but no difficulty has arisen from this source. The barrier pillars are solid and show no signs of crushing or disintegration.

Record is kept of the pillars and stumps that are left standing underground. Section maps are maintained showing every portion of the unmined coal, and these are brought up to date at given intervals. If a small stump pillar is lost, it is shown on the map, with the gob by which it is surrounded. The coal recovery is calculated, moreover, by area and not by tonnage. This method is the more accurate and convenient. In the adjacent coal fields a recovery of 90 per cent generally is considered acceptable, this being the maximum obtained in the average mine. The recovery at the Indianola mine is nearer to 100 than to 90 per cent. It actually amounted to 96 per cent for the six months which ended last June.

The gob is ventilated by forcing air through it along the break line. The entries shown to the east of the

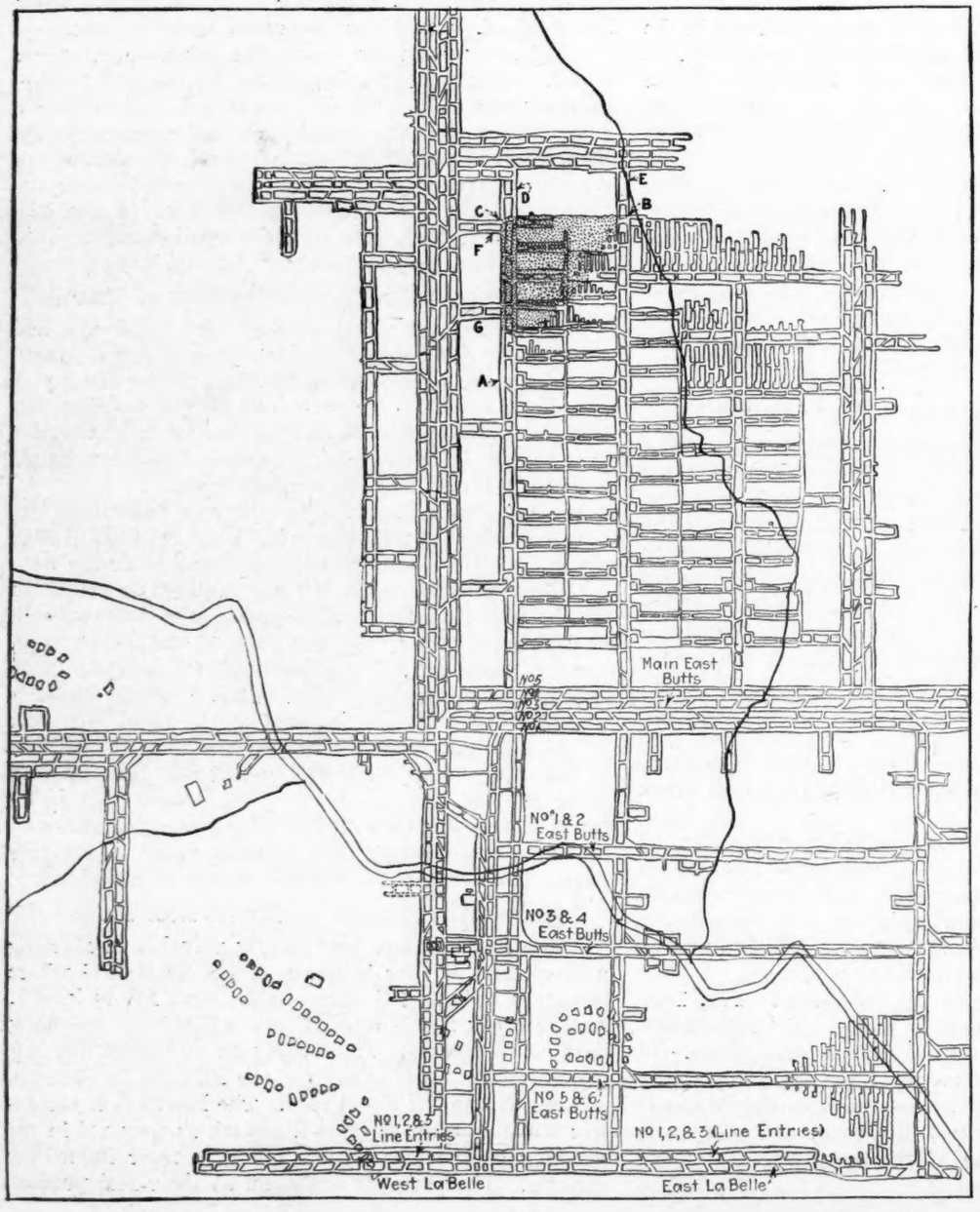

FIG. 1

Indianola Mine

The stippled area *CAB* is the area where the pillars have been removed and the roof caved. The coal in that part of the mine is being operated by what may be termed a concentration system started by roadways driven in pairs and rooms driven at right angles to these roadways. Someone appears to have discovered that if the wing pillars in roadways are big enough and strong enough, the chain pillar, that is the pillar between the pair of roadways, can be made as narrow as you please. This principle, enunciated long ago, is just beginning to be recognized and acted upon.

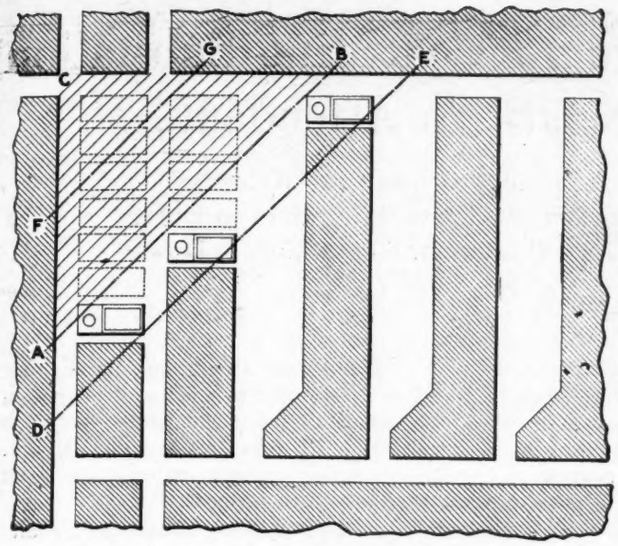

FIG. 2. PLAN OF MINING WITH SHORT ROOMS

The rooms are 85 ft. long and 14 or 16 ft. wide with pillars of equal width. When pillaring commences the rib is cut by narrow crosscuts driven as needed but spaced at 8 to 10 ft. centers. This gives a pillar 4 to 6 ft. wide and 14 to 16 ft. long, which is mined away all but a stump 4 ft. square or thereabout. This is cut away by hand.

northeast panel in Fig. 1 are intakes. In these the air travels north, thence west into the rooms and into the gob at *B*. Here it is split into two courses. One extends southwest along the break line, at the same time penetrating the gob, and thence to the main entry returns through bleeders in the pillars indicated by *F* and *G*. The gob is so tight in places that the air moving along this course does not thoroughly dislodge the gas from this section. However, no gas collects at any point away from the gob.

An exhaust effect is produced through *F* and *D*, increasing the efficiency of the air circulation through the gob from the lower split which travels along the break line. It is a simple matter to sweep the gob section entirely clear of gas. This usually is done on idle days, the full output of the fan being directed into the northeast section by stopping the air courses through the other parts of the mine. From what has been said it will seem that the ventilation in this mine is positive and always under perfect control.

In the southeast panel, rooms were at first driven on both sides of the butts. This method of working lessened the number of entries required, but it made it difficult to ventilate the workings properly. Rooms are now being driven from one side only and are being made 21 ft. wide and 250 ft. long, on 45-ft. centers. The usual room-and-pillar system is adopted with a slight modification in that the rooms are worked in sets of four. The company is obtaining excellent results in this panel, recovery being well above 95 per cent of the coal originally in the ground.

Practically all mining is now being performed in the eastern panels of the mine. In the southwest section only line entries have been driven. Still less has been done in the northwest. A five-entry butt was started in this latter area for purposes of development, tying in with the entries driven farther south, and thus opening up the two panels on the west. Not far from the main haulage a so-called rock fault was encountered. This was pierced, and a normal coal thickness again encountered. Such occurrences are not uncommon in the Freeport bed of coal.

Storage Wall That Will Not Bulge or Fall

BY W. K. CROSSON
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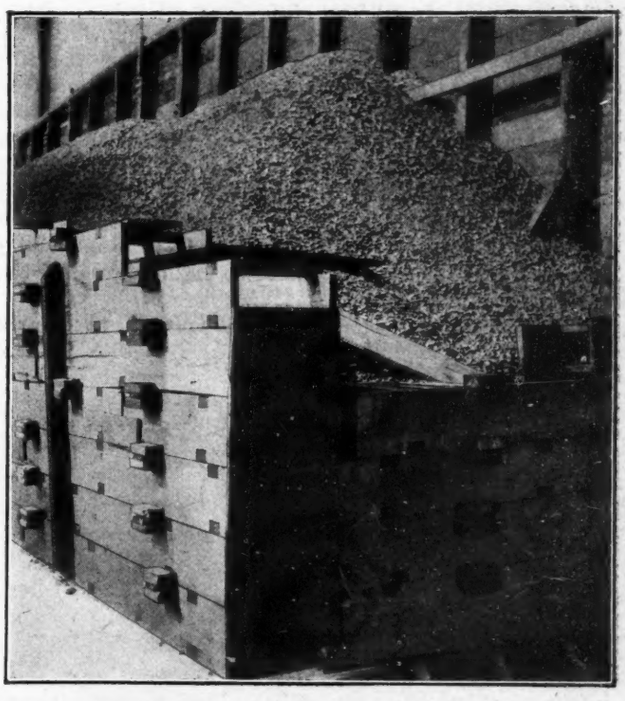
WHEN coal without large lumps is stored and there is no room, or it is undesirable to have it run into a conical pile, walls are built composed of 1-in. hardwood with long 1-in. strips running far into the coal bed. The weight of the coal on the strips holds the wall upright and forms the means of keeping itself in curb. But too often the wall will bulge and give way, causing much inconvenience, loss in labor and endangering the lives and limbs of employees.

The wall shown in the illustration is built in sections and can be extended to any height. The material used for the box sides is 1½ in. thick, 12 in. wide and 16 ft. long. These side planks are held together at the top and bottom by a strip 2 x 4 x 24 in., sunk flush with the edge. These binding strips are spaced 4 ft. apart. A 1 x 5-in. notch is cut in the bottom and top for the treaded stringers running into the coal. These may be of any length and should project about 4 in. from the outside of the wall with a 1½-in. piece nailed to them to hold them in place.

The space between planks forming the inside and outside of the wall can be filled with coal, thus giving added



DOUBLE WALL GIVES BETTER RESULTS THAN SINGLE

In this wall the weight of the coal furnishes its own restraint through stringers which run into it. Further strength is given by filling up the space between the two walls with coal.

strength and utilizing the stocking space to the full. A wall such as this is far more stable than the older form of construction and does not bulge or fall.

THE FILM "THE STORY OF COAL," prepared under a cooperative agreement between the Bureau of Mines and the National Coal Association, is being given widespread exhibition in India. A report from the representative of an American mining machinery firm interested in the picture's exhibition states that the film had been shown several times in Calcutta and other large centers before the engineering and coal-mining fraternity and that it was being shown at numerous important collieries.

Protective Devices So Safeguard Coal-Mine Substation At Drifton That It Needs No Attendant

Placed at Center of Load Substation Is 3,000 Ft. from Its Attendant—Provisions Made to Assure Safety of Equipment—First Motorman to Enter Mine in Morning Starts Substation and Last One Out at Night Shuts It Down

BY E. B. WAGNER*
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SEVERAL coal-mine operators and engineers on Dec. 7 witnessed an interesting demonstration of the new automatic substation at the Drifton Colliery of the Lehigh Valley Coal Co., being the guests jointly of the coal company and the General Electric Co., the manufacturer of the electrical equipment. The workings of this colliery cover an extensive territory, so that it is impractical to serve it all from one substation with current at 250 volts. The topography of the beds is such, however, that the mine is naturally divided into several sections.

It was found that the haulage requirements of two of these sections could be supplied at 250 volts from a single substation without providing extremely large feeder capacity. In order that the substation might be located near the approximate load center of the two sections, it was placed about a mile from the breaker and 3,000 ft. from the nearest point at which could be found an engineer at work during every hour of a 24-hour day, this man being in charge of a slope hoist. To save the wages of a station attendant and to obtain more uniform operation, it was decided to make the substation automatic—that is, controlled by a manually-operated pilot switch located in the engine house of the slope just mentioned.

Central-station 3-phase 60-cycle power at 11,000 volts is received at an outdoor substation placed near the slope. This is stepped down to 4,600 volts by three transformers. The alternating-current feeder line runs direct to the substation at this latter potential and thence passes on to supply hoists, pumps and fans located in other sections of the operation.

The substation is a brick building about 20 x 18 ft. in ground dimensions provided with an asbestos-shingle roof. It contains a 200-kw. 250-volt direct-current synchronous converter with the necessary alternating- and direct-current control apparatus. The tap from the 4,600-volt line goes through a pole-top disconnecting switch, a lightning arrester and choke coil of the horn-gap type and a fuse. From the fuse the line runs in conduit to an incoming oil circuit breaker operated by a magnetic contactor. Thence it goes to the converter transformers located just outside the building, from which the low-tension leads extend to the converter through the starting and running contactors.

The heart of this substation is a motor-driven drum controller that governs the sequence of starting operations and which is itself controlled by several protective devices. The operation of raising and lowering the direct-current brushes of the converter is performed by a small motor mounted on the bedplate of this machine.

Starting is accomplished in the following manner: Closure of the control switch in the engine house ener-

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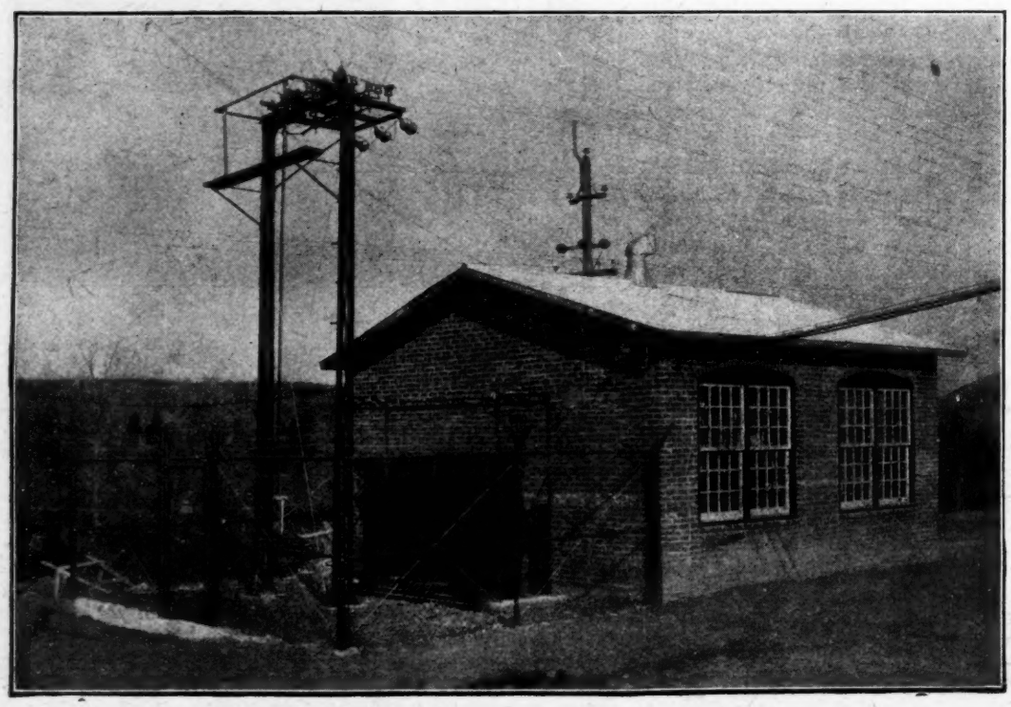
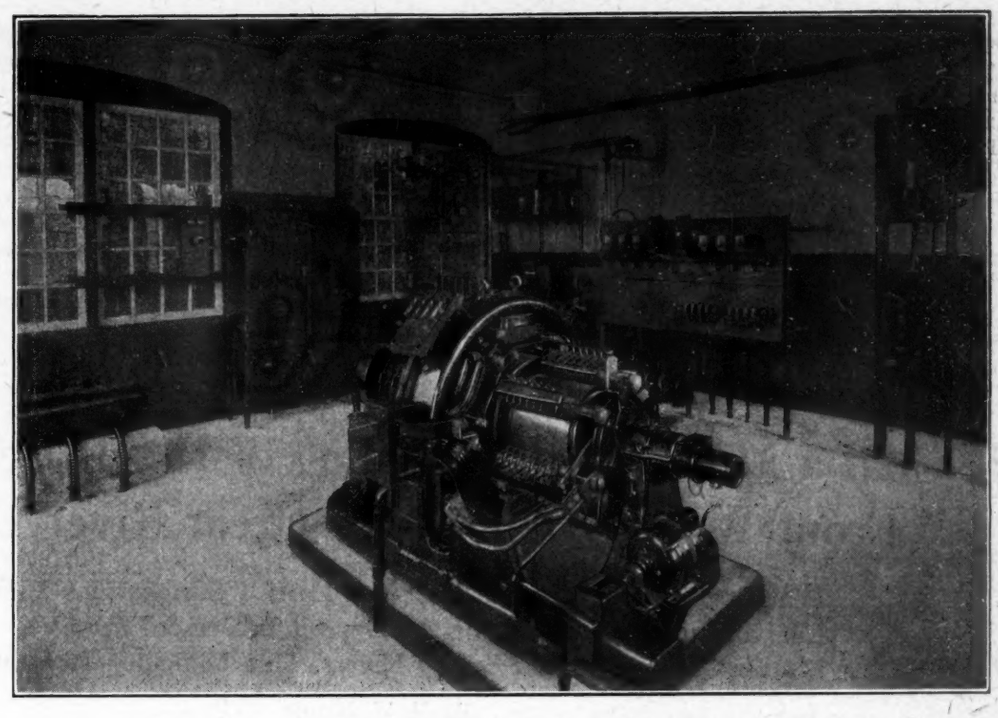


Automatic Substation

This substation is on the surface. It receives its power from a transformer station at 4,600 volts alternating current. This current passes through a pole-top disconnecting switch, a lightning arrester, and a choke coil of the horn-gap type and a fuse. Thence the line runs in conduit to an incoming oil circuit breaker operated by a magnetic contactor, and passes to the converter transformers and thence to the converter through starting and running contactors.

Inside of Substation

Building has ground dimensions of 18 x 20 ft. It contains a 200-kw. 250-volt direct-current synchronous converter with the necessary alternating- and direct-current control apparatus. A small motor mounted on the bedplate of the machine raises and lowers the direct-current brushes of the converter. Among the protective devices are a dashpot timing relay to provide against too great slowness in starting, temperature relays, potential relays, a bearing temperature relay and standard induction-type overload relays.



gizes a voltage relay which closes its contacts, provided the alternating-current potential is high enough for satisfactory operation. The closing of the contacts on this relay energizes a main-control contactor, which in turn closes, provided the various protective devices, described later, are in proper position. Provided the direct-current brushes are raised, closure of the main control contactor starts up the motor by which the controller is driven. If they are not raised, the circuit is first completed through the brush-raising motor, which then performs its function and stops, thus completing the circuit to the controller-driving motor. The controller drum starts revolving and first closes the incoming-line oil circuit breaker and then the contactor that starts the converter.

The converter now starts operation and comes up to speed. While this is going on, the rotary field is flashed across the terminals of a small direct-current generator driven by the drum-controller motor to insure that the field will be built up with the right polarity. After being flashed the main field contactor closes, putting the field onto the converter. The converter should now be up to synchronous speed, but if it is not, the controller stops revolving. When synchronous speed is reached, a centrifugal switch on the converter shaft closes its contacts, restarting the drum controller. This opens the starting contactor control circuit and completes the circuits of the running contactor, whereupon it closes, putting full alternating-current voltage on the converter terminals.

The direct-current side of the converter is controlled by a generator type of automatic reclosing circuit breaker. The two power circuits served are equipped with similar apparatus of the independent feeder type. After normal direct-current voltage of proper polarity is applied to the converter leads a polarity relay closes the circuit of the operating coil on the generator breaker. This breaker then closes, as does also each feeder breaker after a predetermined time interval, provided the direct-current feeder line is clear.

On stopping, the control switch is opened, thus in succession cutting out the voltage relay, main control contactor and running contactor. This restarts the motor driving the drum controller, which accordingly revolves, tripping out the incoming-line oil switch and completing the circuit to the brush-lifting motor, which then functions, after which both machines cease operation and all devices are in the "off" position ready to restart. As the locomotive drivers from both sections supplied from this substation must pass the slope engine house it is the intention to have the last man out at night stop the equipment and to have the first one in in the morning start it.

This installation is provided with the protective devices described in the following paragraphs:

A dashpot timing relay provides against excessive slowness in starting. This is held in a picked-up position until the starting contactor closes, whereupon it begins to settle. If it completes its movement before the running contactor closes (which would pick it up again), it closes its contacts and energizes a lockout relay which opens the control circuit of the main contactor. This relay is of the type that must be reset by hand.

Temperature relays prevent excessive overheating of the machine windings. These open the circuit of the main control contactor until the windings cool down, whereupon a restart is made. These relays are adjusted so as to have a slightly greater rate of heating than the machine windings. A flash-over on the alternating-current collector rings energizes one of three current relays, which in turn energizes a notching relay and opens the main control-contactor circuit, causing a restart to be made. If operated three times without being reset by hand, the notching relay on the third operation locks itself out, causing a permanent shutdown until this device is reset manually.

A potential relay across one phase and the previously mentioned voltage relay across the other phase prevent single-phase starting. These hold out the main control contactor until three-phase power is supplied. If single-phase occurs while the station is in operation the con-

verter will continue to run unless the current consumed becomes sufficient to cause one of the three temperature relays to function. The machine will then stop and refuse to resume operation, as this would necessitate single-phase starting.

Another temperature relay prevents the machine bearings from overheating. Similarly overspeeding is forestalled by an overspeed trip switch mounted on the converter shaft. These devices open the main control contactor circuit and must be reset by hand.

Standard induction-type overload relays which trip the main oil circuit breaker provide against short-circuits in the station wiring. This, upon opening, if the other apparatus is in the running position, energizes the lockout relay, thus tripping it and causing the station to shut down.

In the slope engine house a small panel has been installed. This has mounted upon it a control switch, direct-current voltmeter and three incandescent lamps. The direct-current voltmeter is connected to the terminals of the converter and indicates when that machine is up to speed with proper voltage. One lamp is connected to each trolley wire. Thus they show that the direct-current breakers have closed properly. The third lamp gives an indication that the alternating-current power supply is on.

Is Coal a Mineralized Peat Bog or Has It Been Formed From Woody Deposits of Great River Deltas?

Peat-Bog Theories Assume That the Earth's Surface Has Vibrated Like a Drumhead—Granting the Deposit Is Derived from Vegetable Matter Carried Into the Sea by Rivers, This Difficulty Is Removed

By H. W. Hixon
New York City

THE theory that coal was formed where the vegetation composing it grew is open to many serious objections. Chief among these is the fact that in any coal region many beds may be found, and if this theory were true for each bed it would be necessary to assume that the land had been elevated above the sea or lake level during the growth of the vegetation and depressed below sea or lake level to receive the covering of sediments which later turned to stone and now form the bulk of the coal measures.

Thick beds of sedimentary rock, most of which are of marine origin, require us to assume adequate erosion areas from which the materials of which they are composed may have been derived. This can signify but one thing: That the whole of the coal measures were at one time a vast delta deposit or dump from some previously existing continental land mass which has since subsided below sea level.

Atlantic Continent Supplied the Detritus

During a geological period that preceded the formation of the sediments which now compose the rocks of the Appalachian coal measures a continent existed to the east of the present continental mass of North America. The Appalachian coal measures are composed of the eroded material derived from this no longer existing continent. The location of this erosion area can be confidently stated because sediments are always thickest in the direction from which the material composing them was derived. The rocks forming the coal measures of the eastern part of the United States are thicker in the east, and thin out toward the west. Areas of deposition are always smaller than those of erosion in the ratio of 1 to 10 or more, and on this basis the Appalachian continent was a vast area with a large river or rivers comparable to the Mississippi emptying into a gulf or sea like the Gulf of Mexico. The Mississippi carries to the sea, as sediment and in solution, enough material to lower the surface of its drainage basin 1/6,000 of a foot per annum. Accompanying it is a vast quantity of vegetable matter which floats on the surface of the water.

Some of the vegetable matter, having become waterlogged, sinks below the surface and is driven along with the sediments. Such vegetable matter as floats continues to float for some time after reaching the sea, and does not become waterlogged until it has drifted free of the sediments and reached clear water. It finally sinks and forms on the sea floor a thick mattress of woody material free of impurity. The sediments build out from the delta of the river mouth and in time cover this woody mattress, thus completing the first stage of coal formation.

A delta has several mouths, and the dominant mouth at any time does not remain such for all time. This main mouth will naturally discharge the greatest amount of water and sediment and also of woody or vegetable matter. Each mouth of the delta, however, will discharge a portion of the total burden carried by the main river; otherwise the mouths would fill up and cease to exist. The vegetable matter, because it floats, will go farther out to sea than the sediment. It spreads out fan-shaped from the river mouth and is followed by the sediments in the order of their fineness. The sediments also will spread out in a fan shape, thinning out as the distance from the river mouth increases.

Imagine the river represented by the arm and the delta by the fingers of the hand, each mouth carrying its share of the sediments and vegetable matter to the sea. In front of each mouth is building a more or less thick mattress of vegetable matter which has floated out into clear water, become waterlogged and sunk to the bottom. These various mattresses of vegetable matter intersect and unite into one continuous mass in the direction of the sea, but near the delta they diverge and are separated by the following fan of fine sediments. This may account for the branching of the coal beds and for the slate and shale partings in coal deposits.

The slate partings in coal beds are persistent over

extensive areas and show that they were formed from extremely fine mud deposited in quiet water; otherwise they could not be so uniform in composition and thickness. All shallow water sediments show ripple marks; the absence of these from the slate and clay partings in coal beds indicates that they were deposited in deep quiet waters. It also has been observed that when the roof of a coal bed is composed of black slate the roof is thicker than when it is composed of sandstone. Partings always thicken in the direction in which the other adjacent strata thicken, and thin out in the opposite direction. A delta is, therefore, capable of building a series of coal beds simultaneously which may be separated by barren material. The delta consists of a branching series of beds with clay partings between the members of the same coal deposit, and all the other phenomena that the theory of growth in place cannot explain unless it makes the unreasonable assumption that the surface of the earth has vibrated like a drumhead.

Arctic Coal May Have Come from South

It has been argued that, because fossil plants of tropical origin are to be found in the coal measures of high latitudes and because coal beds of considerable thickness are largely composed of such plants, the Arctic must have had at some time a tropical climate. If we consider that rivers in previous geological ages may have had their sources in the tropics and their deltas in the Arctic, we can see how far from the mark this evidence may have been interpreted.

Waterlogged vegetable matter carried along with the sediments into the sea becomes embedded in these sediments and gives rise to the carbonaceous shales of the coal measures. Thus it happens that we find all stages, from pure coal, resulting from vegetable matter sinking in clear water, to carbonaceous shale, which will not burn but which, nevertheless, contains an appreciable quantity of carbon.

Trees Will Sink with Their Roots Downward

It also has been argued that because the roots of trees are found in coal in normal position, this is indisputable evidence that the vegetation grew where the coal is found. Nothing further from the truth could have been offered as evidence, because trees swept out to sea by floods always sink roots downward, as the roots become waterlogged first, and naturally go down in the position in which they grew. Furthermore, the waterlogged, woody mattress that later turns to coal may accumulate on any eroded land surface that sinks below lake or sea level. Such a surface may well be covered at the time of sinking and inundation by growing vegetation. The roots of the trees and their stumps would appear to indicate that all the vegetation grew where the coal is found, whereas only a minute portion of it actually grew there. The case of Reelfoot Lake, in Tennessee, which was submerged during the earthquake of 1811, will illustrate this point. An area 7 x 20 miles sank, so that boats can now float over the tops of tall trees. If this lake receives a large amount of driftwood which becomes waterlogged and sinks and is later covered with sediment, all the conditions for the proof of either theory will be present, whereas the major accumulation will be due to drift.

Tidal currents of varying velocity are known to run along coasts, and this would cause the removal of the woody matter from the ocean bottom or prevent its accumulation. In this way can be explained the thinning of the coal or its absence over certain areas. At New Orleans attempts were made to sink deep wells for the purpose of obtaining artesian water. At a depth of about 1,100 ft. a mattress of wood was encountered.

The mud lumps which form the delta of the Mississippi may be explained by the accumulation of marsh gas, resulting from the decomposition of the woody matter at great depth beneath the clay of the delta. These mud lumps have been known to rise in the stream channel and change the course of the river, thus interfering with navigation. Occasionally small islands are formed in this manner near the deltas and gas and salt water are discharged from the summit of the domed-up land.

During the earthquake at New Madrid in 1811-13 it is stated that vast quantities of water were spouted from craters in the sandy soil. Lignite was brought up by the water. New Madrid is within the old delta of the Mississippi, although only a short distance below Cairo, Ill., and the mattress of wood at that point is partly carbonized to coal, whereas at New Orleans it is still wood.

It would appear, therefore, from the evidence at hand, that a series of coal beds is forming at the mouth of every great river which drains a region where vegetation is plentiful. This probably has been the case in all ages and will continue to be so as long as rivers flow and wood floats to the sea.

Which Powder Is Best for Tracing Cloth?*

By L. A. Lansing
St. Louis, Mo.

PREPARED powders for application to tracing cloth on which inklines are to be drawn have long been on the market. Some of these are sold under trade names. Sometimes powdered talcum and pumice stone are used for this purpose. Experience has shown, however, that the best material for this service probably is precipitated calcium carbonate, the common name for which is "precipitated English chalk." This is relatively inexpensive. A 1-lb. cylindrical container of calcium carbonate can ordinarily be purchased from any druggist for about 35c. Such a supply will suffice for a considerable period, even in a relatively large drafting office.

Powdered pumice stone sometimes cuts the tracing cloth and always tends to dull the ruling pen, hence its use is inadvisable. Powdered talc, while satisfactory when first applied, ultimately renders the surface of the tracing cloth greasy. For these reasons, calcium carbonate appears to be the preferable material.

Examination by the Bureau of Mines of samples of lignite taken in the Bluff Point mine, located 16 miles north of Seldovia, Alaska, and about 140 miles south of Anchorage, in that territory, reveal that this lignite is of fair quality and generally is preferred to the bituminous coal brought up from Vancouver Island or the States. It usually is sold locally to the canneries, although occasionally small boats take a load to Cordova and Anchorage. The price at the mine is $5 per ton of 42 cu.ft. A heating plant, especially designed for the burning of Alaskan lignite, has been installed at the Alaskan Experiment Station at Fairbanks.

Business Is Finding Out that if buyers will not fall for prices, prices must fall for buyers.—*Norfolk Virginian-Pilot.*

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How Mine-Motor Armatures Should Be Soldered

Connections Should Be Cleaned and Then Tinned or Covered With Liquid Flux—For Overworked Equipment Use Pure Tin for Solder—Half Lead and Half Tin Serves Where Locomotives Are Not Overloaded

By H. H. Johnston*
East Pittsburgh, Pa.

When armature leads are to be soldered to commutators the connections should be free from dirt, oil, grease, paint or insulating material. In many repair shops it is difficult to attain this immunity. Before attempting to solder the leads or armature coils to the commutators they should be cleaned thoroughly and then tinned. Liquid flux brushed onto the cleaned metal parts and then allowed to dry offers a substitute for tinning, as it forms a thin coat over the cleaned surfaces which will remain until solder is applied.

Mention was just made of liquid flux. This term is applied to the material used to make the solder flow readily and to cause it to attach itself to the metal. This flux is made in either liquid or paste form. The compounds, of which there are many, give good results and may be used without harm. It is well to test the flux from time to time and, when deciding on which grade to use, to ascertain by the aid of litmus paper whether acid is present. This paper will turn red in the presence of acid.

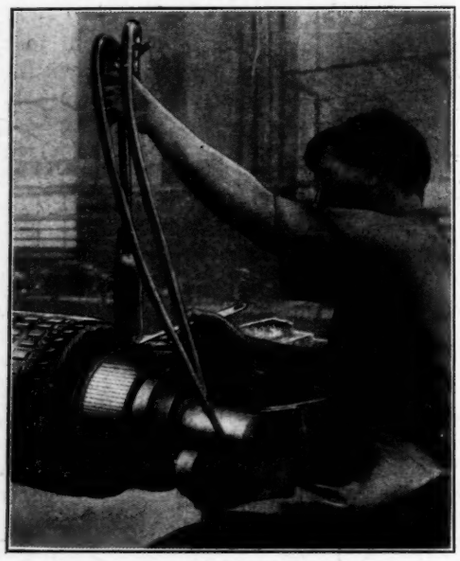


FIG. 1. SOLDERING AN ORDINARY COMMUTATOR

When this method is used the solder frequently works back and joins adjacent leads, short-circuiting them. This is particularly likely to occur when pure tin is used as solder.

When the motors are operating at high temperature or are overworked it is advisable to use a solder of high melting point. Pure lead melts at 325 deg. C. (617 deg. F.). A solder composed of one part lead and one of tin has a melting point of 180 deg. C. (356 deg. F.) and is known as "half-and-half." Pure tin melts at 230 deg. C. (446 deg. F.). Pure lead cannot be used, as it is difficult to work, will not flow when heated by the soldering iron and cannot be made to cling to copper.

Pure tin, on the other hand, flows easily and rapidly and so can be used, but it tends to spread beyond the surface being soldered. Greater skill, therefore, is required when using pure tin. It will eat itself into the copper if too long overheated. It is more expensive than half-and-half solder, but when motors are overworked or subjected to high temperatures and overspeed it should be used in the soldering of the armature bands as well as for attaching the coil leads to the commutator necks. Whenever tin is used, on account of its free-flowing quality the clearance between the parts being soldered should be as small as possible.

When motors are being operated under normal conditions of load and subjected to neither excessive temperatures nor overspeeding, which latter causes unusual mechanical stresses, half-and-half solder gives good results.

Where special soldering pots are not in use the common practice followed in soldering the leads to commutators is as illustrated in Fig. 1. With this method solder will frequently work back, short-circuiting adjacent leads and commutator bars. Special care is necessary to prevent this, particularly when pure tin is being used.

Soldering Leads by Wholesale Methods

A process that makes it possible to solder at one time all the leads to the commutator is illustrated in Fig. 2. In shops where a large number of motors are repaired this equipment is indispensable. The armature is placed commutator end down over a central opening. Solder is then caused to flow around the neck of the commutator by a lowering of the plungers in the two pots containing the molten metal. After the solder has been in contact with the commutator neck and leads connected thereto for several minutes it is drained back into the end pots by raising the plungers. The armature is then lifted away, whereupon another armature can be similarly treated. With this equipment all the armature-coil leads are soldered to the commutator in one operation without danger that any excess of solder will work back of the commutator necks.

Fig. 3 illustrates the soldering of armature-coil leads to the type of commutator that is fitted with risers. This operation is performed from the side, a wide-tip soldering iron being used. Excess solder will not tend to flow back from the connection provided the end of the armature opposite the commutator is raised about six inches. On the other hand, if this is done the solder will tend to flow toward the forward end of the armature, as is desirable.

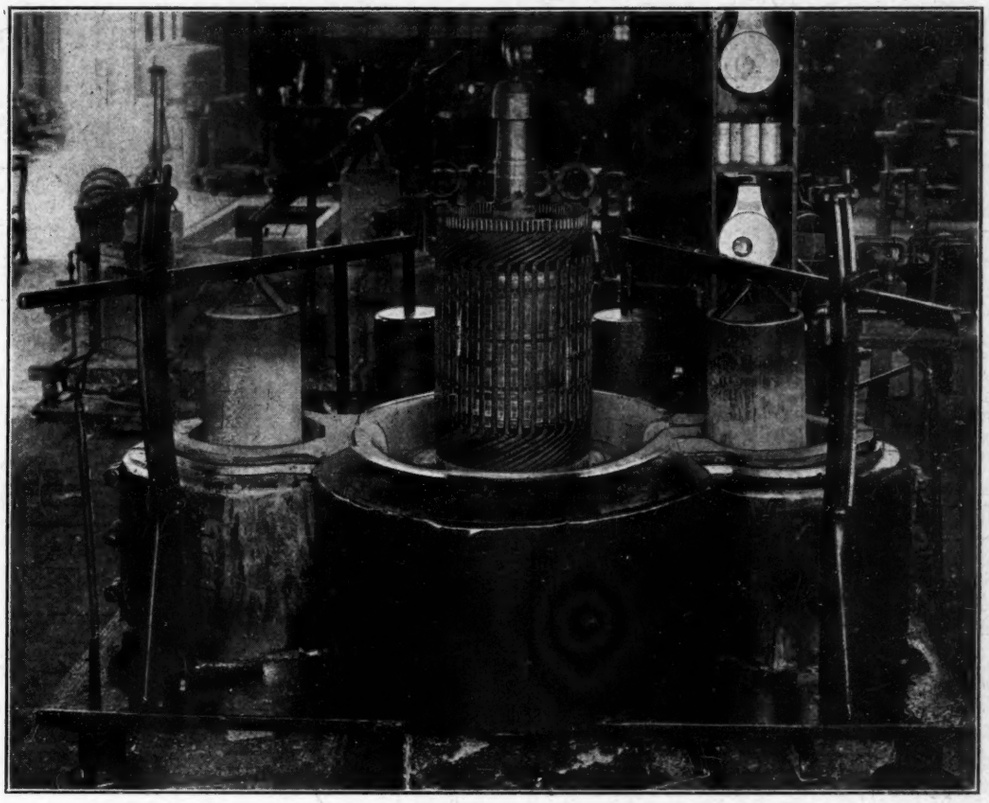
Soldering irons most commonly used where any great amount of this work is done are of the self-contained type. The arrangement is such that the iron is heated either by gas flames or by an electric heating element.

*General engineering department, Westinghouse Electric and Manufacturing Co.

FIG. 2

Soldering All Leads at Once

Soldering pots of this kind are particularly useful in large shops. Suspending the armature commutator end down, the commutator is lowered into the melted solder until the latter comes in contact with the commutator necks and with the leads. There is no possibility of the solder running back too far along the latter. After a few minutes the molten solder is drained back into the side pots by raising the plungers therein. The armatures may then be lifted out and other commutators soldered in like manner. Great speed of operation in the soldering process may thus be attained and the work is performed in the best possible manner.



The ordinary soldering iron heated by a separate gas flame is much used, but appreciable time is lost and not as good work can be done, even by the use of relays of irons, for solder cannot be worked satisfactorily where there is a wide variation of temperature. Fig. 1 shows a self-contained type of iron, gas heated.

In order to obtain good results when soldering observance of the following precautions is necessary: (1) The connections to be soldered should be cleaned, tinned and kept clean until they are soldered. (2) The iron should be of a good size, so as to hold heat for long periods; 2 or 3-lb. irons give good results. (3) The work should be performed with a hot iron. (4) Pure tin solder should be used unless it is certain that the temperature range of the armature will be such that half-and-half will give satisfactory results. Solder in thin strips 10 or 12 in. long will be found of handy size. (5) The soldering iron must be kept well tinned at all times. To tin an iron, file the surface clean, heat and dip in a strong solution of zinc chloride, then rub a solder stick on the hot iron to give a good tinned surface. (6) The use of too much soldering flux should be avoided.

FIG. 3. SOLDERING A COMMUTATOR WITH RISERS

A wide-tip soldering iron should be used in this process, and if the joint lies in a slightly inclined position while being soldered, the molten metal will not tend to flow back along the leads.

AN EXAMINATION HAS BEEN MADE by Bureau of Mines engineers of development work on a deposit of lignite near Reno, Nev. Preliminary experiments looking toward possible beneficiation of the material have been made. The shaft is about 45 ft. in depth and discloses a seam of lignite at least 30 ft. thick at the opening. The material improves with depth, and it is hoped that it will be available as a domestic fuel after briquetting and possibly as a power fuel in the vicinity of Reno.

AT THE EXPLOSIVES LABORATORY at the Pittsburgh experiment station a series of sand tests has been completed with the object of ascertaining the accuracy of the tests for determining the efficiency of a detonator for use with explosives. Further work is being done with T. N. T., tetryl, and California detonators along the same lines. From the results it will be possible to formulate specifications and tolerances for the detonators now in use and indicate means of testing and fixing tolerances for any new types that may be developed.

"WHAT KIND OF COAL do you want, madam?"
"What kinds have you?"
"We have egg coal, chestnut coal and ———"
"I guess I'll take egg coal; we have eggs oftener than chestnuts."—*American Druggist.*

Cage-Operated Stop Makes Caging Safe and Efficient

Caging at Shaft Heads or Landings Is Accompanied by Much Risk of Improper Manipulation and Consequent Delay—Device Described, If Made Entirely Automatic in Operation, Renders Such Mishaps Improbable

By Dever C. Ashmead
Kingston, Pa.

IMPROPER design of shaft heads and landings may cause accidents that will seriously delay the hoisting of coal, though without injury to those who operate them. Thus an improperly-designed station is one where cars may, upon occasion, get beyond control and run into the shaft, with disastrous effects to the guides, buntons and timbering, tearing out wires and piping and smashing cages, should they happen to be in the path of the car.

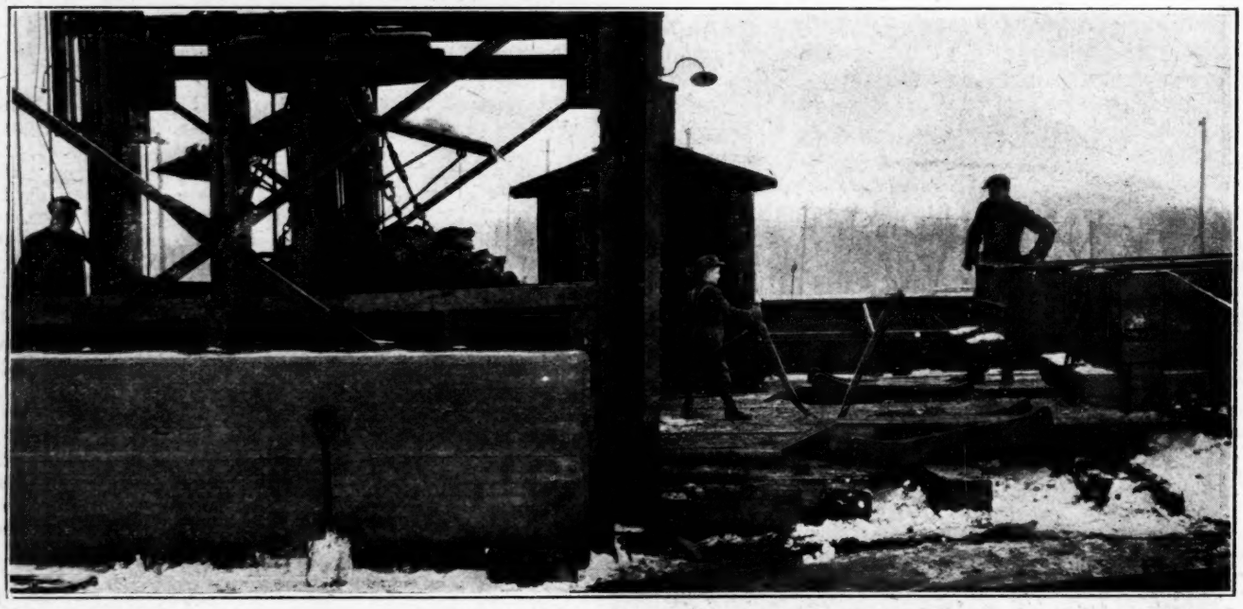
No matter how careful and efficient the cager may be, so long as the human element is not entirely eliminated he is likely to make mistakes. These mishaps, unfortunately, almost invariably occur during the rush hours. The resulting damage to equipment, serious though it may be, usually is secondary in importance to the loss arising from delay to operations and the consequent reduction in output.

Furthermore through improper design shaft stations may be rendered not only liable to accident but highly uneconomical as well. In the effort to counteract this deficiency men may be employed in unnecessary numbers. Thus there is a waste of labor that might have been put to more productive use had the station been properly designed.

Gravity, when intelligently utilized and not abused, is one of the most satisfactory of forces for the movement of cars at a shaft landing. To accomplish the desired result, however, the grades must be steep enough to effect movement of the stiffest cars and short enough to preclude the possibility of their attaining dangerous momentum. Such a grade, however, must be sufficiently long to accommodate the longest trip of cars that will have to be handled. In other words, a stop must be provided at the landing against which the trip must continuously press. The only distance through which the cars can move freely is thus from the stop to the cage, and this should not greatly exceed one car length. Furthermore, they can traverse this distance only when the stop is released, permitting their passage.

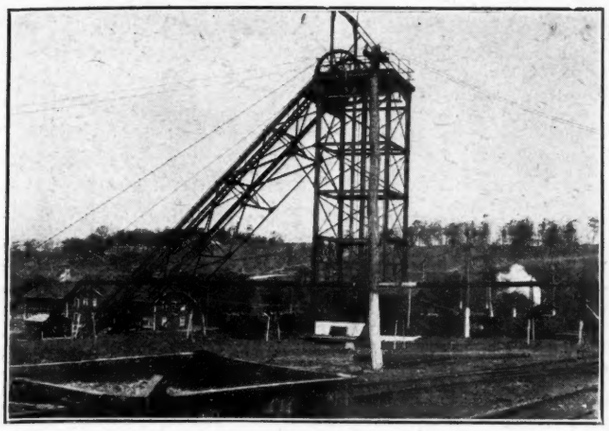
With a single storage track serving a two-compartment shaft such an arrangement as has been above outlined is out of the question, as it is then necessary to install a switch in such position that cars may be run to the compartments alternately. This means that they must traverse an appreciable distance before they reach the cages or the stops immediately in front of them. Yet such a grade must be steep in order to accommodate stiff cars. The result is that those that are free-running must be spragged or braked in order to prevent them from attaining such a velocity as to cause damage either to the car or stop. If the stop fails under the impact the car is likely to go into and down the shaft.

The device known as the Watkins car stop, invented by C. W. Watkins, of Kingston, Pa., a hoisting engineer for the Glen Alden Coal Co., has been adopted by this firm at many of its plants. This contrivance embodies practically all the qualities that an efficient car stop should have. It is simply and substantially constructed and not liable to derangement. As may be seen in the accompanying illustration, this device consists of a beam or beams pivoted in the middle and somewhat enlarged vertically at the ends. The pivot bears against a coiled



WATKINS CAR STOPS ON THE EMPTY TRACK SIDE OF SHAFT

The front stops are in position to prevent any motion of the trip of cars lying behind them. The stops in the rear have been tilted down by the lever which the boy has just pulled and is holding in place. The empties can, therefore, run toward the cage, till one car has passed, when the stop will tilt and refuse passage to those behind. Of course, boys like that shown are not only not entrusted with work like this but are not allowed to engage in any work whatever around the mine.



PEACH ORCHARD HEADFRAME OF GLEN ALDEN COAL CO.
Separate empty storage tracks feed separate compartments of the shaft and each compartment receives its loaded cars at the foot of the shaft from a separate storage track. Thus the car stops can be placed near the cages.

spring which eases the shock between trip and stop. It may be so arranged as to be either partly or entirely automatic in operation. In the first instance, it is under control of both the passing car and a hand lever; in the second it is controlled by the car and cage alone. Circumstances will determine which arrangement is preferable at any particular location.

The device is normally set at a distance equivalent to one car length from the cage landing or shaft compartment. It rests upon and is supported by at least three ties, the last of which is braced to the shaft timbers. Except while a car is passing over it the stop never sets in any position other than against the trip.

The installation at Pettibone Shafts Nos. 3 and 4 may be taken as typical of these stops; the grades approaching the shaft are sufficiently steep to permit the cars to move freely yet are long enough to accommodate a trip of either loads or empties depending upon whether the surface landing or a shaft station is under consideration. As in any case the grade is steep the cars rest with bumpers touching and with the axle of the leading car against the stop. When a car is to be caged a hand lever is thrown. This lowers the end of the stop resting against the axle of the leading car, permitting it to move onto the cage. The remaining cars of the trip simultaneously move forward.

The device is of such length and conformation that it permits both axles of the car to pass the forward end of it, at which point the leading axle depresses the rear of the stop, thus raising the forward end so that it will arrest any further movement of the trip.

As the trip can thus move only through the distance vacated by the car crossing the stop, it attains no dangerous speed or momentum. Thus only one car can pass the stop at a time, and as it is only slightly longer than the wheelbase the device is in position to arrest movement of the succeeding car before the first one has passed beyond it.

This type of stop is semi-automatic and the only chance of accident arises from the possibility of the cager manipulating the lever at the wrong time. This can be avoided and the entire mechanism made automatic by means of an attachment whereby the cage upon reaching its landing throws the stop. By this means a car cannot pass the device except a cage be in proper position to receive it. If at any time it is desired to use the cage for hoisting or lowering other materials than coal the stop-operating mechanism may be disconnected, locking the device in the "closed" position and effectively preventing the passage of cars.

Employment of a stop of this kind permits gravity to be utilized in the movement of cars without danger of their running away and being precipitated down the shaft. The stop is always set against the cars except when the levers are wrongly manipulated. This risk may be entirely removed by making the operation entirely automatic and so free from the danger which is always present when the human element is relied on.

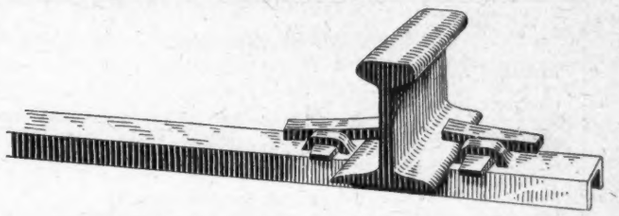
Steel Mine Tie with Tee Clamps Fitting Into Lugs Holds Rails to Gage

STEEL mine ties have long been used in and about the mines, until the shape of the tie itself has become fairly well standardized. Improvements in design, therefore, are largely confined to the means of fastening the rail to the tie. Many devices varying widely in detail have been developed. The latest steel tie to make its appearance is that of the McLellan Mfg. Co., of South Charleston, W. Va.

As may be seen in the accompanying illustration, this tie, like most others, consists of a light channel iron. Out of the bottom of this channel at the proper distance apart lugs or loops are pressed. Through these, T-shaped clips are driven, one point of the tee resting on the flange of the rail while the other bears upon the tie. These clips not only hold the tie and rail securely together but maintain the rails at proper gage. When the clips are driven home, bending their ends downward over the edge of the tie holds the clip in place and prevents it from slipping and releasing the rail.

When it is desired to lay a jumper rail this may be done by means of a special clip wherein one leg of the tee is bent upward, so as to bear against the ball of the jumper rail. It will be at once apparent that the jumper may be readily loosened and slid forward, then retightened at the desired point.

The following claims of superiority for this tie are made by the manufacturers: (1) It reduces the cost of laying track by reason of the speed with which the operation can be performed. (2) If a change from steel to wooden ties is desirable, this can be made with the steel ties in place and the rails will consequently be to gage, after which the steel ties can be removed. This can be done without interruption to service. (3) The gage cannot be changed even where a jumper rail is employed. The rail cannot be removed so long as the clips are in place except by sliding it through the clips. (4) The sharp corners and edges of the tie in contact with the ground tend to dig into the bottom and prevent movement of the track. This is a particularly advantageous feature on curves.



STEEL MINE TIE WITH LUGS AND TEE CLAMPS
Lugs keep the rails to true gage and so assure having a track which will be at all times safe for transportation. With a tie of this type track gages are unnecessary.

Collapsible Danger Signal for Firebosses Acts as a Warning and a Fence

By R. W. Lightburn
Gans, Pa.

MUCH difference of opinion appears to exist as to the proper kind of danger signal for general use. A signal of this kind should be such that all persons approaching it will be amply cautioned that danger lies ahead. To assure that all comers will be adequately forewarned, some kind of living monument would need to be stationed at an uncountable number of places. This, of course, is out of the question. In its absence a signal with plain letters inscribed upon it should be so placed that all who are concerned cannot fail to see it.

Such signals should be so made that they readily may be set up at the entrance or entrances to all dangerous places. The fireboss in the course of his examination prior to the working shift may have occasion to place several danger signals. Quite frequently it will take him some time to find a suitable board, and when found trouble may be experienced in placing it satisfactorily. Many times a danger signal is leaned against a chunk of coal placed upon the floor in the middle of the track. This is by no means a satisfactory warning.

At best the fireboss has about three hours in which to make his examination and to place adequate danger signals. He has no time to hunt for an ax, a post and a nail. He is almost certain, therefore, to be behind time in reporting his section of the mine in shape for the men to enter, and the entire operation in such a case is robbed of an appreciable percentage of its output.

The accompanying illustration shows a danger signal that can be placed in position securely and in such a way that no person can pass it without being fully aware of the fact. This contrivance is so simple that it needs little explanation. The frame is made of 1¼-in. pipe; the signal is 36 in. long and 18 in. high, the letters being 10 in. high and red upon a white background. The side legs are so made that they will extend to any width from 30 in. to 12 ft. The signal can be placed upon a post or X-bar by driving a nail and suspending it from the hanger provided for that purpose. The lettering can be made larger if necessary, and other alterations can be made to suit local conditions. One advantage possessed by this danger signal is that it cannot be overlooked or inadvertently passed.

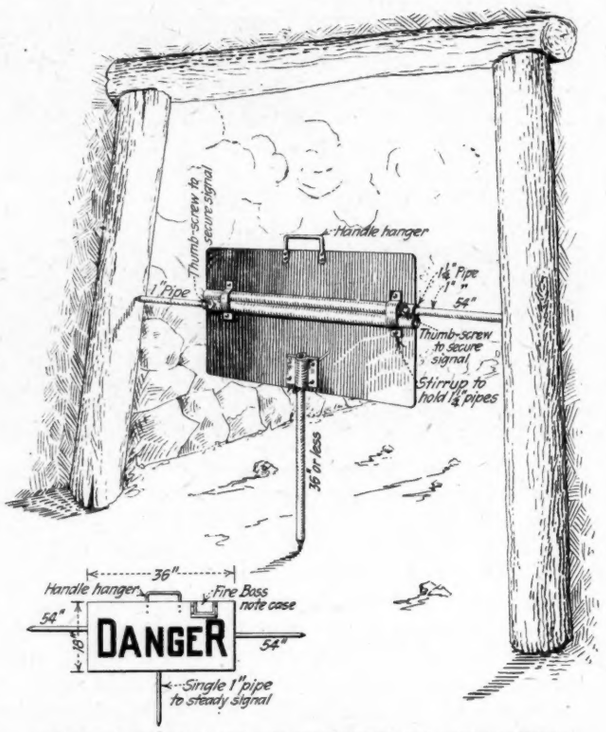
A pocket is provided for a card or cards upon the back of the danger signal. These cards can be picked up by the mine foreman or assistant and checked with the permanent report in the record book. While this signal may seem to be unnecessarily heavy, this defect is more than compensated by the fact that it is a combined signal and fence. This I have proved many a time to be a great advantage.

FIREBOSS' BLANK CARD

Danger from Roof
Danger from Gas
Danger from Side Walls
Danger from Broken Posts

(Mark × against dangers found)

Time: Signature.....
Date: Occupation.....



DANGER SIGNAL TO BE ERECTED BY FIREBOSSES

A dangerous place in the mine, especially one which involves the explosion hazard and into which the entry of a person is likely to do injury to more than to the one person thus trespassing, should be protected by a sign that cannot be unwittingly passed. That shown above is also a fence. It is so safeguarded that it is not likely to fall down. The man who would pass it must remove it or crawl under it, and if he does so, and meets with an accident, the fault is his alone.

Ventilating Fan Ignites Gas in Upcast, Causing Severe Mine Explosion

By F. C. Sinback
Oak Grove, Ala.

SEVERAL years ago I was employed at a large coal mine which had at its airshaft a steam-driven fan receiving steam from a single boiler located near the fan house. Every three or four weeks the boiler had to be cleaned or repaired, and consequently it was necessary to close down the fan. On such occasions every man was taken out of the workings and the circuit breakers and switches on every mine circuit were pulled out, removing any possibility of firing the gas electrically.

One Sunday, however, after the ventilation had been suspended for two or three hours, the fan was restarted. It had been running only about three minutes at slow speed—for it was the general practice not to speed it up until it had run five or ten minutes—when a terrific explosion occurred. Fortunately, there was no one in the mine nor in the fan house either, the engineer, after having put the fan in motion, having walked into the boiler room, which was distant about 75 ft.

The state inspectors and the representatives of the U. S. Bureau of Mines after making their examinations concluded that a fire probably had been left burning in the mines and that the fan when started drew an explosive mixture over this fire, with the unfortunate result related. I was master mechanic of the mine at

the time and in making repairs to the fan house, which was damaged by the force of the explosion, I found that the fan wheel was loose on the shaft and on closer examination I discovered that it evidently had been loose for some time, for it had worn the key and key seats quite perceptibly.

The fan was enclosed in a steel housing which at the sides afforded little clearance. On finishing my repairs on the fan house and being ready to start and test the fan I remained inside the fan house to see how the fan would behave when the engineer started it up. This is what I saw: When the fan reached a certain speed below the normal speed of operation it shifted along the shaft and struck the housing, making a shower of sparks such as steel will emit when being ground on an emery wheel. Since that moment I have been convinced that the shifting of the fan and the sparks emitted when the fan struck the housing were the cause of the mysterious explosion of that Sunday afternoon, for undoubtedly an explosive mixture of gas and air was being drawn through the fan at that time.

Anthracite Inspectors Discuss Blasting, Electrical and Mine Fire Dangers

FOR the first time in the history of the anthracite inspectorate, the mine inspectors threw open to the public one of their regular semi-annual meetings, the State Department of Mines specifically requesting the operators to be present at the sessions held in the ballroom of the Reddington Hotel in Wilkes-Barre beginning Thursday, Dec. 15. The preliminary session was, however, for the mine inspectors exclusively, twenty-one men being present.

The afternoon meeting was open to representatives of the operators. The first paper, which was presented by D. J. Roderick, was on danger signs. After some discussion motion was made and passed that the inspectors declare their preference for the adoption of the danger and warning signs now used in the bituminous coal fields of Pennsylvania.

The next paper, on "Delayed and Premature Blasts," was presented by Inspector S. J. Phillips. Attention was called to the dangerous practice of drilling with undersized bits. The author advocated that each section foreman carry gages and see that all drills be kept of sufficient size to allow the free insertion of the explosive cartridge. He called attention also to the pernicious practice of shortening squibs and recommended that men be prohibited from returning to a blast within fifteen minutes after the ignition of the squib. He also thought that every man should carry a watch. The discussion which followed indicated a preference for legislation that would make electric blasting compulsory.

Inspector P. J. Moore presented the next paper, which had reference to "Electric Haulage." During the subsequent discussion it was brought out that the inspectors were in favor of the use of storage-battery locomotives in preference to trolley machines throughout gassy regions of the mine. They particularly favored such types of locomotives as are gas- or flame-proof.

Many of the inspectors objected to the use of electric locomotives where locked safety lamps are employed. A motion was made embodying this objection, but it was strenuously opposed by a number of the inspectors and representatives of the operators. The discussion brought out the fact that in many instances locked safety lamps are used where no traces of gas are found, lamps of this type being employed as a purely precautionary measure. The motion accordingly was laid on the table to be taken up at a later meeting.

On Friday, Dec. 16, "Mine Fires" were discussed, Mr. Walsh leading. This subject was illustrated by drawings showing that a fire existed at the face of two rooms on a cross-entry on which seven rooms were located. The inspectors went on record as favoring the building of a stopping in the return in preference to one in the intake when fighting fires of this character.

Fighting mine fires by means of inert gases also was discussed by Mr. Walsh. The method he proposed was the removal of oxygen from the air by passing it through a fire, then through a pipe under water, thus reducing the temperature of the gases to about 700 deg. After this the gases would be passed through a cooling tower and their temperature lowered to about 70 deg. They would then be forced into the fire area by means of a force fan. It was estimated that a plant of this character sufficiently large to produce 15,000 cu.ft. of inert gas per minute would cost about $20,000 and that the cost of the gas itself would be about 1c. per 1,000 cu.ft. Mr. Walsh stated that flue gas from the mine boiler plant could not be used, as this usually contained too much oxygen.

It was believed by many present that the method proposed would be impractical in case of a fire where the ground was broken and fissures extending to the surface had developed. It was thought that in such a case the gas would short-circuit and pass out through these openings. Others believed that the method would be practicable, provided that most of these openings to the surface could be blanketed. Mr. Walsh pointed out that the best results would be obtained if some of the surface bleeders were allowed to remain open, as this would permit a freer circulation of the inert gases, which, when they came into contact with the heated rocks in proximity to the fire, would cool them off.

During the discussion it was pointed out that nineteen fires now exist in the anthracite region and that collectively they cost the coal companies as much as $10,000,000 per year. Discussion on this subject of mine fires was so lengthy that it extended into the afternoon session. After its conclusion P. C. Felton began discussion on "Safety Lamps."

On Saturday morning the conference met at 10 a.m. and Mr. Friel led the discussion on the subject of "What Is a Mine Within the Meaning and Intent of the Mining Law With an Abandoned Section Included?" Discussion on this subject was short, as the party left at 11 a.m. to visit the mine fire at a property of the Red Ash Coal Co., on the outskirts of Wilkes-Barre.

After viewing this veritable inferno, the party returned to the hotel and the conference ended. The inspectors went on record as favoring joint meetings with the operators' representatives in the future. This conference was a complete success. Such meetings furnish an excellent opportunity for the inspectors to become better acquainted with the operators and to demonstrate how they can co-operate with them. They also make it possible for the operators to gain an insight into the methods of the inspectors.

JAMES T. BEARD HAS BEEN ILL for several weeks. His many friends will be glad to know, however, that he is well on the road to recovery. It is expected that his departments will reappear in *Coal Age* next week.

The Weather Vane of Industry

News Notes Chronicling the Trend of Industrial Activities on Which Depends the Immediate and Future Market for Coal

THE year just closed marked in this country a turning point in the drastic reaction against inflation, according to the current issue of *The Guaranty Survey*. "The financial and commercial interrelations of nations," the *Survey* continues, "are so comprehensive and intricate that no country, however favorable its domestic conditions, can, in a worldwide readjustment, escape the ill effects of economic derangement elsewhere. Nevertheless, American business activity in general has been for some months gradually emerging from the trough of depression.

"The distinct improvement since mid-year in the fundamental elements of the business situation as a whole warrants a much more hopeful outlook for the coming year than was justifiable at the beginning of 1921.

"The most gratifying aspect of the year's industrial events is the upturn during the last few months in the general volume of production in the country, which about midsummer had reached its lowest point since 1914. Although some of the increase is clearly due to seasonal influences, there has been, nevertheless, since July, an upturn so pronounced that it must represent fundamental improvement.

"This upturn is most marked in the textile industry and less so in the iron and steel industry. . . . The large consumption of cotton, required by the increased activity of the textile industry, is particularly encouraging in view of its influence upon an important section of the country and the revised estimate of this year's cotton crop.

"Production in many other lines of manufacturing has also shown pronounced increase over the low points of the year. Especially is this true of manufactures of paper, lumber, tobacco, leather, and foodstuffs—meat, flour, sugar, etc. These increases in volume of production represent not merely seasonal advances but more substantial gains, indicating the fact that readjustment of industry, lower prices and costs of operation are producing the desired results."

Tire Production Increases

Production of tires continues to increase in the Akron factories, which are now working on spring stocks. More than 1,000 men have been added to the working forces of the Goodyear Tire & Rubber Co. in the last two weeks, and this number, according to semi-official reports, is one-third of that to be put on by Feb. 1. Production is exceeding 16,000 a day. The aeronautical department is working at capacity on government orders. The Firestone Tire & Rubber Co. has been lengthening hours and adding some men to the force. Sales costs have been cut 38 per cent and overhead expenses 58 per cent in 1921, according to announcement. Sales of the General Tire & Rubber Co. this year are unofficially reported to be about $6,000,000, compared with $5,755,000 for 1920. The Phoenix Rubber Co. proposes to start operations soon after the first of the year. The company was thrown into receivership by two large creditors. The International Harvester Co.'s Akron plant has been adding employees in the last few weeks, until it is estimated daily production will be forty tractors and five trucks early in January.

Unfilled U. S. Steel Orders Gain

That the unfilled orders of the United States Steel Corporation would show an increase for the month ending Dec. 31 if the average for the remainder of the month kept up to that established during the first twenty days, was announced Dec. 27. Factors in the expected increase are the smaller shipments from the mills of the company, excellent railroad orders and a fair export business.

Railways Plan More Improvements

Having started work on its cut-off bridge at Castleton, the New York Central R.R. expects to fulfill its plan, halted by the entrance of the United States into the World War, to spend more than $20,000,000 in improving its freight and passenger handling facilities at Albany, N. Y., by completely revamping the present track system. The world's greatest repair shops will be established at West Albany and the present equipment will be utilized and the new shops will provide employment for thousands of skilled machinists, carpenters, foundrymen and cabinet workers.

Directors of the Ontario & Western R.R. at their last regular monthly meeting approved the purchase of about $500,000 worth of new equipment to be delivered next spring. No new financing will be involved, as the company has sufficient cash on hand to cover the purchase.

The Great Northern Ry. will place orders for 3,500 cars as soon as its bond issue of $30,000,000 for general rehabilitation is authorized. The order will be for 1,000 stock cars, 1,000 box cars, 1,000 gondolas and 500 refrigerators.

Freight-Car Loadings Drop 15,923

Loading of revenue freight during the week ended Dec. 17 totaled 727,003 cars, compared with 742,926 the previous week, or a reduction of 15,923 cars, according to the American Railway Association. This was a reduction of 75,268 cars compared with the corresponding week last year and of 79,731 cars compared with the corresponding week in 1919. Coke loadings increased 507 cars within a week, bringing the total to 7,145. Coal loadings totaled 134,842 cars, 2,994 less than the week before and more than 90,000 cars below the corresponding week last year.

Idle freight cars on Dec. 15 totaled 531,337, an increase of 31,689 cars within a week.

Plant Resumes to Aid Industry

Iron and steel production was resumed at the Upson Nut Works of the Bourne-Fuller Co., Cleveland, Jan. 3 as an experiment toward improving industrial conditions. Eight hundred former employees were given work at a 15 per cent reduction in wages.

Sheet and Tin Company Speeds Up

The American Sheet & Tin Co., New Philadelphia, Ohio, had a total of nine sheet mills and one jobbing mill open Dec. 27. Operations were resumed on four additional sheet mills. Five of the sheet mills had been idle for several months.

Shipping Board Helps U. S. Coal Trade; Orders American Fuel for Bunkers

IN its annual report the U. S. Shipping Board says it has studied coal and statistics showing the relative rates on coal. The board has bid for control of commerce between this country and Central and South America, including coal exports. It does not plan to establish permanent coal depots in Europe, as coal can be purchased as cheap on the open market. Cargoes of coal shipped from the United States to Europe increased from December, 1920, to June, 1921, owing to the high price of British and Welsh coal. To increase shipment of coal from the United States, operators of Shipping Board vessels insisted upon American coal wherever it was available for bunker, in order to stimulate American coal production.

In Constantinople and Italian, Spanish and Portuguese ports American coal is obtainable for bunkerage. Shipping Board vessels bunkered in Northern Europe at Dunkirk with French coal. The board did not attempt to contract for coal on the Pacific coast, as its requirements for bunkering there are small. As only a small part of the fleet burns coal it was not necessary to establish an extensive system of coal bunkering stations. In certain trades, however, coal-burning vessels can be profitably operated, and to supply these coal bunker stations were established at Rio de Janeiro, with 25,000 tons approximate annual consumption; Buenos Ayres, 15,000 tons; Ponta del Gada, 20,000 tons, and St. Georges and St. Thomas, 18,000 tons each.

Alaska's 1921 Coal Output Is 78,000 Tons; Washery Completed at Matanuska

ALASKA'S output of coal during 1921 was about 78,000 tons, compared with 61,111 tons in 1920, according to preliminary estimates abstracted from the annual report on mineral resources and production in Alaska now being prepared under the direction of Alfred H. Brooks, of the U. S. Geological Survey. The estimates are believed to be within 5 per cent of the actual figures. In 1921 about 58,000 tons came from the Matanuska field, principally from the Eska mine, operated by the Alaskan Engineering Commission to supply coal for the railroad. The Navy Coal Commission continued underground exploration for coal at Chickaloon and at Coal and Moose creeks, with fairly encouraging results. The Eska mine, operated since 1917, was closed in October for the reason that there was a large stock of coal on hand. The Evans-Jones mine, near the Eska, is being systematically developed and now has a connection with the railroad. A washery for the Matanuska coal was about completed at the end of the year.

Work was suspended at the Bering River coal mine, in the Bering River field, in May, 1921. Though excellent coal has been found on this property, the underground explorations have not yet established the presence of a tonnage large enough to justify the construction of a railroad. Other leases have been granted in the Bering River field, and plans are under way for the building of a railroad to Controller Bay.

The Healy coal mine, in the Nenana lignite field, is now being operated on a regular productive basis. During the winter of 1920-21 some coal was mined on Lignite Creek, in the same field, by the Broad Pass Coal Co. Small lignite mines were operated at several widely scattered localities—two along the Alaska Railroad; one at Homer, Cook Inlet; one at Kugruk, Seward Peninsula, and one at Wainwright Inlet. It is probable that small quantities of coal were mined at other localities, from which no reports have yet come. In 1921 coal was produced at probably a dozen localities.

The most significant feature of the year's coal mining is that there are now two commercial mines, the Evans-Jones and the Healy, and these mines, though only small producers, will be operated throughout the year because they have railroad transportation. Both these mines are the result of local enterprise.

The question whether the deposits of high-grade bituminous coal in the Matanuska and Bering River fields contain a large tonnage of fuel available under the present high cost of recovery and with the present market is still unanswered. There is, however, no doubt that one or both these coal fields will be able to supply the local demand. Actual mining of the lower-grade of Matanuska coal has proved that it can be produced in competition with imported coal.

The Alaskan Engineering Commission has during four years of operation at the Eska mine made an output of nearly 200,000 tons of coal at a cost of about $1,150,000, or $5.60 a ton. This was used in the construction of the railroad. Had the government imported this coal, it would have cost nearly $3,000,000. This proves beyond doubt that commercial mining in at least part of the Matanuska field is feasible. Some have even gone so far as to assert that the Matanuska branch of the Alaska Railroad, which cost less than $2,500,000, has already proved a blunder. Such statements are without basis of fact, as shown by the record of mining in the Matanuska field.

British Empire Steel Corporation Will Reduce Wages of Its Coal Miners

A CRITICAL situation has developed in the coal fields of Nova Scotia, due to a disagreement between the British Empire Steel Corporation and its employees over the rate of wages. The present agreement expires Dec. 31, and on Dec. 19 a conference was held in Montreal between the officials of the British Empire Steel Corporation and the representatives of the United Mine Workers. The company proposed a reduction of 25 per cent in the rate which became effective on Jan. 1, 1921, or about 33 per cent on the rate now paid. The miners refused to accept the reduction and proposed a continuance of the present agreement until March 31 next, to which the company would not consent, and the conference terminated without any agreement having been reached.

Official notices have been posted at the mines of the company announcing that after Jan. 1 the wages paid will be at the rate which became effective Jan. 1, 1920, less 25 per cent, that the reduction is the only course which would enable the company to regain for its coal the markets lost during the war, and guarantee steadier work at the collieries. About 15,000 men are affected, including those employed by smaller operators, who will follow the example of the British Empire Steel Corporation. The miners will apply to the government for the appointment of a conciliation board under the Industrial Disputes Act.

Consider Counsel in Kohler Law Appeal

THE Board of Trade of Scranton, Pa., has named a committee to take up the subject of retaining counsel to appear in favor of the Kohler mine-cave act when consideration of the constitutionality of that law comes up before the Pennsylvania Supreme Court this month on an appeal from the decision of Judge Fuller in the case of Mahon vs. the Pennsylvania Coal Co. The Board of Trade suggests that it co-operate with the Surface Protective Association and the Citizens' General Mine Cave Committee.

ENCLOSED WITHIN A RULE BORDER the *Wilkes-Barre Times Leader*, on Monday, Dec. 26, printed the probable program of the anthracite miners, saying that while the statements given were not official they were believed to represent the dominant sentiment. The *Times Leader* thinks the demands will be:

Wage increase of 35 or 40 per cent.
Uniform eight-hour day for all workers.
The check-off.
Abolition of the Board of Conciliation.

WAGE REDUCTION ACCEPTED IN ALBERTA MINE.—At the Collie Mine, Drumhellar, Alta., 150 men belonging to the United Mine Workers of America have gone back to work at a wage reduction of 25 per cent. Secretary Peacock says that the return to work after notice of reduction does not mean an acceptance of the lowered wage.

Chicago Is the World's Greatest Coal Market

Coal Selling Companies of That City Sell One-Fifth of Coal Produced in United States—Chicago Switching District Consumes More Coal Than All New England States

BY F. C. HONNOLD*

COAL selling concerns, producers and wholesalers located in the city of Chicago sell approximately one-fifth of the total coal production of the United States. The extent of the Chicago market is perhaps most accurately shown by the statistics of the Fuel Administration. During the coal year from April 1, 1918, to March 31, 1919, the producing and wholesale companies having headquarters in that city handled through previously established and existing agencies the distribution of something more than 20 per cent of the total coal production of the United States for that year. The reason for the slightly larger than normal distribution during that twelve-months period was the abnormally large provision of railroad fuel coal.

There are approximately 125 producing concerns operating mines in 10 states that have their headquarters and general sales offices in Chicago. There are 100 wholesale concerns in the city selling the product of producing coal companies from all sections of the United States. The total number of coal-selling concerns in Chicago is estimated to be three times as great as that of any other coal market in the world.

Within the Chicago switching district alone more coal is consumed annually than is consumed in all of the New England States. More coal also is consumed in the switching district of Chicago than in all of New York State, including Greater New York.

According to the statistical data of the U. S. Fuel Administration covering the one-year period April 1, 1918, to March 31, 1919, during which time there was maximum coal movement from all mines and fields throughout the country, it is shown that the following amount of bituminous and anthracite coal, in net tons, moved into:

	Tons
New York	21,116,000
Ne England	20,680,000
Total	41,796,000
Anthracite (into both these markets)	23,000,000
Grand total	64,796,000

The division of the above tonnage of anthracite is about equal as between New York State and New England

Chicago coal consumption, however, is only about one-third of the total tonnage sold by Chicago concerns. From Illinois and Indiana alone the average coal production for the last five years has been about 105,000,000 tons. Approximately 65 per cent of this tonnage is sold by coal-producing or wholesale concerns located in the city of Chicago—68,500,000 tons.

In addition to this there is an average of 7,500,000 tons of coal originating in various Eastern fields sold by representatives in Chicago for movement all rail to points outside of Chicago — Southwest, West and Northwest — the greater bulk of this coal going into Michigan, Wisconsin Iowa and Illinois. There also is about 1,500,000 tons of coal from Virginia, central Pennsylvania, western Kentucky and Arkansas as well as other remote districts, that is sold by various producing Chicago concerns who act as representatives in this market for general Western distribution. Besides general steam use, much of this coal is for special application—metallurgy, chemical, smithing, etc.

There are seventeen concerns in Chicago that sell on an average 46,000,000 tons of coal per annum. The bulk of the coal they sell originates in Illinois and Indiana, but of the seventeen companies, three operate mines in several other states and sell, from their Chicago headquarters, the entire production of these remote mines so operated. Coal originating in other fields than Illinois and Indiana and distributed by the foregoing and various other, smaller, sales concerns located in Chicago, for movement to Eastern, Western and Southern markets as well as coal for bunkerage and export totals about 10,000,000 tons per year.

The quantity of coke orginating in other sections and sold by Chicago concerns in Chicago and other Western and Northwest districts is variously estimated at from 2,500,000 to 3,000,000 tons per annum. These figures, however, are minimum, No satisfactory statistical information is available on coke. There is a substantial quantity of Eastern coal reaching this market that is made into byproduct and metallurgical coke and mostly used by the industries originally receiving the coal. No account is taken of such coke in this statement. Neither is any account taken herein of the volume of gas-house coke distributed throughout the Central Western states in determining the volume of the Chicago market, since the coal from which such coke was made is shown in the general movement from Eastern and local fields.

It is not surprising that Chicago is the largest coal market in the world. It is made so by the wide variety and great range of origin of coal sold in and through this market to an enormous manufacturing area reaching 400 miles up and down the Mississippi-Missouri River valley. Taking

*Secretary-treasurer, Illinois Coal Operators Association, Chicago.

COAL CONSUMPTION, CHICAGO SWITCHING DISTRICT

For year ending March 31	1914	1915	1916	1917	1918	1919
Illinois	10,745,172	8,358,836	9,963,231	11,722,911	16,311,236	16,133,737
Indiana	4,380,096	3,496,606	5,027,305	5,667,962	5,509,442	6,896,780
Totals	15,125,268	11,855,442	14,990,536	17,390,873	21,820,678	23,030,517
Ohio	324,003	273,247	285,292	†148,825		
Pittsburgh	207,285	128,875	52,108	†98,270		
East Kentucky and Tennessee	760,108	1,738,915	2,513,403	†1,761,934		
West Virginia (splint and gas)	486,443	463,162	603,741	†542,799	‡6,500,000	‡5,500,000
Smokeless (Pocahontas)	4,500,159	5,389,819	5,941,830	†4,933,748		
Eastern Coal by boat (Bit.)	590,396	973,429	973,038	†800,577		
Miscellaneous	†200,000	‡250,000	‡300,000	‡600,000	‡750,000	‡500,000
Totals	7,068,394	9,217,447	10,669,412	8,886,153	7,250,000	6,000,000
Anthracite (all rail)	‡700,000	‡680,000	‡590,000	‡600,000	‡875,000	‡800,000
Anthracite (by boat)	852,081	831,761	679,998	635,465	875,000	800,000
Totals	1,552,081	1,511,761	1,269,998	1,235,465	1,750,000	1,600,000
Coke (estimated—see text)	.....	.....	.....	.....	.....	2,500,000
Grand totals	23,745,743	22,584,650	26,929,946	27,512,491	30,820,678	33,130,517

† Eleven months only.

‡ Estimated; no exact figures available since 1917 on Eastern and miscellaneous bituminous coals which were zoned out of this district during the war period and came through in limited amounts only on special permit. It is probable that the approximate normal movement of these coals into Chicago will now equal the 4-year average of 1914 to 1917 as a minimum, or about 9,000,000 tons per annum. A correct estimate of total Chicago coal consumption would therefore be, for present normal years, 36,000,000 tons.

NORTH CENTRAL WESTERN STATES MANUFACTURERS

	Chicago	Illinois, Including Chicago	Indiana	Wisconsin	Missouri	Iowa	Total
Population	2,701,705	6,485,280	2,930,390	2,632,067	3,404,055	2,404,021	17,855,813
Number manufacturing establishments	10,538	18,594	7,918	10,394	8,593	5,683	51,182
Persons engaged therein	502,303	805,008	277,600	80,500	195,900	80,500	1,439,508
Materials used	$2,80,025,000	$3,489,054,000	$1,335,851,000	$1,372,723,000	$939,691,000	$403,206,000	$7,540,525,000
Value of product	$3,658,740,000	$5,426,652,000	$1,901,846,000	$1,883,608,000	$1,599,264,000	$741,473,000	$11,552,843,000

only the five major states into which Chicago coal concerns move the great majority of coal used, a few figures given in the accompanying table, taken from the last general United States census, will indicate the tremendous industrial consumption potential.

It also should be borne in mind that approximately 25 per cent of the total bituminous coal used for household consumption in the United States is produced by Illinois mines. This is due to the growing restriction of anthracite distribution to markets nearest to the anthracite mines and to the further fact that many Illinois coal operators several years ago adopted a precise duplication of anthracite prepared sizes and have through widespread publicity educated the public through the West in the use of proper equipment to obtain maximum fuel values and minimum inconvenience from bituminous coal used for household and allied purposes.

Chief among other prime reasons for the pre-eminence of Chicago as a coal market is its central location and the extraordinary radiation of transportation facilities. Forty per cent of the railway mileage in the United States terminates in Chicago; 1,400 miles of belt lines—one-third of the belt line mileage in the United States—encircles Chicago; 39 steam railroads are located or centered in Chicago. Of the latter roads twenty-four are trunk lines, seven of whose total freight traffic is 50 per cent coal tonnage.

Illinois Mine Workers' Earnings

IN the subjoined tables are shown the earnings during the two-weeks period Oct. 16-31, 1921, of workers in 96 Illinois coal mines employing 38,451 men producing a tonnage of 1,690,223. This is approximately 26 per cent of the mines; 45 per cent of the miners and 46 per cent of the total tonnage of the state for the period here shown. The mines included in this showing are located in all parts of the state and operate in coal seams ranging in thickness from 36 in. to 9 ft. The data, from members of the Illinois Coal Operators' Association, were compiled by F. C. Honnold.

There are three coal operators' associations in Illinois, operating a total of 373 shipping mines. The Illinois Coal Operators Association is the largest, having 179 mines, located in all parts of the state and producing normally about 58 per cent of the total tonnage of the state. The Coal Operators Association of the 5th and 9th District has 158 mines, all located within an average distance of 30-35 miles of East St. Louis, and produces about 31 per cent of the tonnage. The Central Illinois Coal Operators Association has 36 mines and produces about 11 per cent of the tonnage.

EARNINGS FOR TWO-WEEKS PERIOD

	Northern Illinois	Danville	Fulton-Peoria	Springfield	Centralia	Du Quoin	—Southern Franklin	Illinois Williamson	Counties— Saline	State Totals and Averages
1. Number of mines	8	5	13	10	3	5	23	17	12	96
2. Av. work time (days)	7.5	9.6	9.7	9.3	9.7	11.6	7.9	10.6	11.	9.5
3. Tonnage	51,072	28,305	108,558	113,630	65,463	105,023	630,407	328,027	259,840	1,690,323
4. Total employees	2,856	541	2,574	2,995	1,390	1,746	14,626	6,460	5,263	38,451
5. Av. daily number all employees working at these mines	2,491	541	2,357	2,699	1,300	1,602	12,234	5,989	4,496	33,709
6. Number earning $50 or more in 2-week pay period	1,027	461	2,156	2,467	1,255	1,546	12,014	5,468	4,391	30,785
7. Av. earnings Group 6 2-week period	$72.24	$86.04	$89.48	$81.55	$73.15	$104.03	$93.23	$101.02	$96.24	$92.76
8. Percentage (Group 6) to av. number working daily (Group 5)	41.2	85	91.4	91.4	96.5	96.4	98.2	91.3	97.7	91.3
9. Percentage of total payroll paid to those making $50 or over	54.3	94.5	88.8	88.4	78.5	93.4	91.7	92.9	92.8	89.6
10. Number of men on payroll in excess daily average working (excluding mine office)	322	.....	177	7.5	81	116	2,139	318	655	4,027
11. Percent absenteeism	11.4	.....	6.9	219	5.8	6.8	14.9	5	12.7	10.7
12. Occupational deduction	$483.37	$524.23	$10,710.75	$5,978.00	$3,194.21	$5,607.45	$26,558.25	$20,017.22	$8,477.51	$81,550.99
Per capita	.172	.971	4.22	1.048	2.313	3.264	1.847	3.173	1.645	2.16
13. Check-off for miners' union dues and assessments	$1,327.19	$583.31	$4,974.43	$4,203.25	$3,465.00	$3,805.95	$36,807.79	$16,080.37	$12,976.96	$84,224.25
Per capita	.472	1.08	1.963	1.40	2.51	2.215	2.561	2.549	2.519	2.23
14. Av. deductions per ton:										
Occupational	.009	0.18	.098	.053	.048	.053	.042	.061	.032	.0497
Union dues	.026	.02	.045	.037	.053	.036	.058	.049	.049	.0514
Total	.035	.038	.143	.09	.101	.089	.10	.11	.081	.1011

AVERAGE DAILY EARNINGS BY CLASSIFICATIONS

	Northern Illinois	Danville	Fulton-Peoria	Springfield	Centralia	Du Quoin	—Southern Franklin	Illinois Williamson	Counties— Saline	State Totals and Averages
Machine Runners:										
Number of men	.....	11	140	130	60	94	788	268	269	1,760
Av. earnings for the pay-period	.....	$92.33	$121.44	$89.07	$89.54	$132.07	$105.07	$114.00	$120.45	$109.72
Av. for days mines hoisted coal	.....	9.62	12.52	9.18	9.23	11.38	13.30	10.75	10.95	11.55
Av. based on every working day in 2 week period (13 days)	.....	7.10	9.34	6.85	6.89	10.16	8.08	8.77	9.27	8.44
Loaders:										
Number of men	464	125	1,270	1,407	750	823	5,994	3,091	2,445	16,369
Av. earnings for the pay-period	$59.52	$67.99	$87.87	$80.45	$68.07	$105.66	$90.14	$101.56	$94.56	$90.63
Av. for days mine hoisted coal	7.93	7.08	9.06	8.29	7.02	9.11	11.41	9.58	8.56	9.54
Av. based on every working day in 2 week period (13 days)	4.57	7.10	9.34	6.19	5.24	8.13	6.93	7.81	7.25	6.97
Aver. tonnage of loaders for days mine worked	3.91	6.06	7.90	8.16	9.02	9.9	13.1	9.00	9.28	9.36
Day Men:										
Number of men	563	325	746	930	445	629	5,232	2,109	1,677	12,656
Av. earnings for the pay-period	$82.72	$92.78	$86.24	$82.16	$79.49	$97.72	$95.00	$98.57	$ 95.31	$93.17
Av. for days mine hoisted coal	11.03	9.66	8.89	8.47	8.19	8.42	12.03	9.30	8.67	9.81
Av. based on every working day in 2 week period (13 days)	6.36	7.14	6.63	6.32	6.11	7.52	7.31	7.58	7.33	7.17
Total (all classifications):										
Number of men	1,027	461	2,156	2,467	1,255	1,546	12,014	5,468	4,391	30,785
Number of mines	8	5	13	11	3	5	23	17	12	96
Av. days mines worked	7.5	9.6	9.7	9.3	9.7	11.6	7.9	10.6	.11	9.5
Av. earnings for the pay-period	$72.24	$86.04	$89.48	$81.55	$73.15	$104.03	$93.23	$101.02	$96.24	$92.76
Av. for days mines hoisted coal	9.63	8.96	9.23	8.77	7.54	8.97	11.80	9.53	8.75	9.76
Av. based on every working day in 2 week period (13 days)	5.55	6.62	6.88	6.27	5.63	8.00	7.17	7.77	7.40	7.14

Coal-Cutting Machines Increased in Use In the United Kingdom in 1920

THAT the mining machine is gaining in favor in the United Kingdom is shown by Part II of the General Report of Mines and Quarries for 1920. The total number of mining machines of all types in use at the close of that year was 5,073 as against 4,482 in 1919. Indications are that as the advantages to be derived from machine mining become more clearly recognized by our British cousins the employment of such machines will increase still further.

English coal cutters differ somewhat in type from those employed in this country. In addition to the percussive (puncher) and the chain types, both of which are common in this country, the English use the so-called disk and bar machines. The disk machine is not dissimilar to our longwall chain machine except that the cutter bar is replaced with a disk or wheel bearing cutter bits upon its circumference—practically a circular saw of wide set. The bar machine in appearance and principle of operation resembles the Hess dustless machine. In this device the cutter bar of the longwall chain machine is replaced by a revolving shaft or bar carrying not only cutter bits but also a helical fin, the purpose of which is the removal of the bugdust, or "holings," as this material is termed in Britain.

In the accompanying illustrations, both of which are taken from the *Iron and Coal Trades Review*, Fig. 1 shows graphically the rate of increase in the use of coal-mining machines covering the years 1910 to 1920 inclusive. From these graphs it will be noted that punchers and chain machines are gaining in favor more rapidly than are the other types.

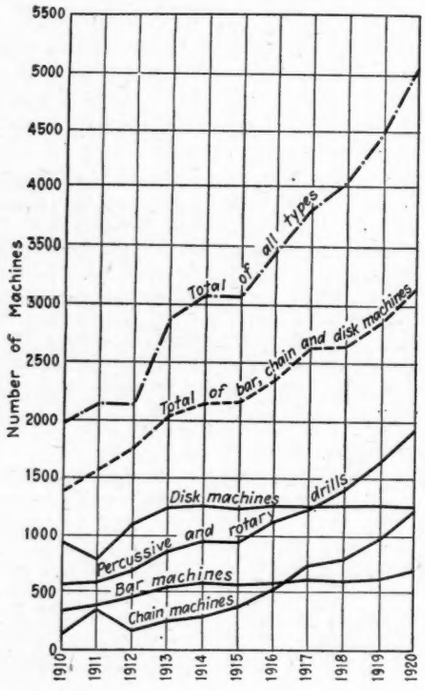
Fig. 2 shows not only the number of tons of coal produced by the electric and compressed-air machines but also the percentage of the total production obtained by the use of these machines. The accompanying table shows the actual figures of coal production and machines used throughout the various districts of the United Kingdom as well as the number of conveyors employed at the coal face.

In every instance both in the graphs and the table the tons mentioned are, of course, long tons of 2,240 lb. each. The production given does not represent the entire work of the machines because in addition to the coal mined by them they also produced 497,615 tons of ironstone, 50,160 tons of fireclay, and 4,193 tons of ganister.

FIG. 1

Machines in Use

A steady increase in the use of mechanical cutters of all types is shown for the eleven years, 1910 to 1920 inclusive.



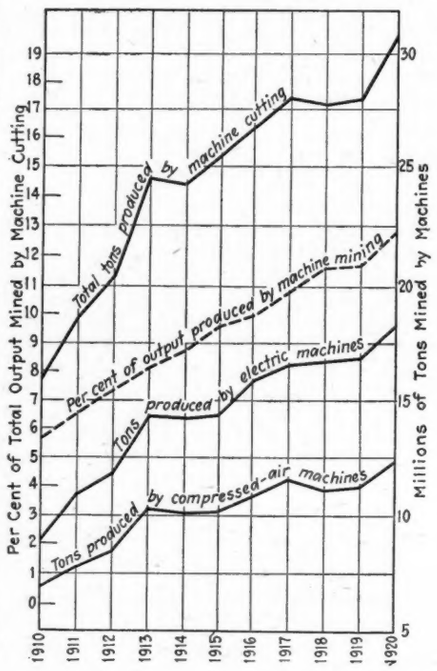


FIG. 2

Coal Cut by Machines

In this graph are shown the production by mechanical cutters in millions of tons and the percentage of the total so produced.

MECHANICAL COAL CUTTERS EMPLOYED IN THE UNITED KINGDOM IN 1920

Type of Machine	Scotland		Northern		York and North Midland		Lancashire, North Wales and Ireland		South Wales		Midland and Southern		Totals	
Electrically Driven	No. Mach.	Tons Coal Produced	No. Mach	Tons Coal Produced	No. Mach.	Tons Coal Produced	No. Mach.	Tons Coal Produced	No. Mach.	Tons Coal Produced	No. Mach.	Tons Coal Produced	No. Mach.	Tons Coal Produced
Disk	631	6,249,247	51	445,346	156	1,209,009	8	39,480	2	20,500	23	268,947	871	8,252,529
Bar	366	2,531,908	29	161,025	78	735,869	33	213,970	26	100,199	18	106,584	550	3,849,555
Chain	151	1,158,325	135	1,207,517	232	2,043,803	28	150,915	44	223,368	132	965,568	722	5,749,469
Percussive	....	.....	....	.....	...	.....	...	.....	...	.....	1	375	1	375
Rotary heading	1	331	....	.....	8	3,316	...	.....	...	.....	1	.....	10	3,647
Totals	1,149	9,939,811	215	1,813,888	474	3,991,997	69	424,365	72	344,067	175	1,341,474	2,154	17,855,575
Compressed-Air Driven														
Disk	93	670,261	47	348,125	119	1,064,047	109	613,017	2	8,416	13	106,584	383	2,810,450
Bar	3	14,450	23	175,476	31	441,557	61	417,747	14	46,750	12	75,071	144	1,959,609
Chain	5	44,354	44	336,690	168	1,995,873	82	599,051	101	611,458	92	749,407	492	4,336,833
Percussive	30	41,584	924	2,511,876	193	288,103	546	878,234	50	65,839	138	186,332	1,881	3,971,968
Rotary heading	....	.....	4	400	3	11,832	10	4,300	...	.....	2	486	19	17,018
Totals	131	770,649	1,042	3,372,567	514	3,801,412	808	2,512,349	167	732,463	257	1,117,880	2,919	13,095,878
Grand totals	1,280	8,710,460	1,257	5,186,455	988	7,793,409	877	2,936,714	239	1,076,530	432	2,459,354	5,073	30,951,453
No. of machines used in 1919	1,189		1,025		880		795		182		411		4,482	
Per cent of increase	7.66		22.6		12.3		10.3		31.3		5.1		13.2	
No. of collieries using machines	252		126		137		103		65		77		760*	
No. coal face conveyors in use	109		99		191		53		329		32		823†	

* In 1919 729 collieries used mining machines. † In 1919 712 face conveyors were in use.

Three Central Competitive Region Associations Refuse To Make April Bargain; One Denounces Check-off

THE Southern Ohio Coal Exchange, which is composed of operators in the Hocking Valley, Jackson and Pomeroy fields, has notified the Ohio organization of mine workers that it will not co-operate with the four competitive states in negotiating a renewal of the wage agreement at its expiration April 1, 1922. The announcement was a sort of bombshell in the camp of the United Mine Workers of America and is the opening of a fight to treat with the miners in the various producing districts separately. Another significant point is the announcement that the Southern Ohio Coal Exchange will not agree to the check-off in the coming wage agreement.

The letter written to the mine workers' organization was in answer to a letter received from John L. Lewis, president of the organization, inviting southern Ohio operators to send representatives to a meeting Jan. 6 at Pittsburgh as a preliminary to negotiating a wage scale. The main points in the letter were:

"The plan of scale-making or wage-fixing employed in the past has contributed seriously to the existing state of extreme poverty and business depression throughout the mining districts of southern Ohio. To reach our natural markets, serve the public efficiently and economically and relieve conditions that are destroying mining communities, the mining industry and the earning power of miners, the operators of southern Ohio feel that it is incumbent upon them to notify you now that they cannot meet with you as heretofore.

"In due time the operators of southern Ohio will propose a new scale for their employees which will not include the check-off and which will eliminate the inequalities placed upon the district."

Pittsburgh and Eastern Ohio Refuse to Attend

The action of the operators centering around Pittsburgh was quite similar to that taken by those of southern Ohio. In reply to Mr. Lewis' letter to O. A. Blackburn, president of the Pittsburgh Coal Producers' Association, the commissioner of that organization, R. W. Gardiner, addressed a letter to J. L. Lewis, saying that "we see nothing beneficial to the public or the coal industry in a meeting such as indicated in your letter, and decline to meet."

Northeastern or, as it is known, "Eastern" Ohio, at least that part of it represented by the Pittsburgh Vein Operators Association, is against holding the meeting. That association passed a resolution Dec. 31 declining to meet with the officials of the United Mine Workers. The resolution adopted reads: "Resolved that in view of the situation which has developed we feel that nothing can be accomplished by a meeting at the William Penn Hotel in Pittsburgh on Jan. 6, 1922, and we therefore decline to send a representative to meet with the miners at that time and place." This section of the field embraces 170 mines employing 15,000 miners.

Illinois operators have notified Mr. Lewis that they will attend the contemplated meeting if it can be arranged and will be represented by Rice Miller and W. K. Kavanagh. However, while they are ready to enter into conference with the United Mine Workers they do not regard that compliance as expressing an intention of making an agreement with the organization. Indiana takes the same position.

The Old Ben Corporation, which takes a leading part in the Illinois coal trade and has some of the largest mines in Franklin County, has addressed a letter to its employees containing the following observations:

"We want to see the union survive, so long as it keeps conservative and competitively in line on wages, so that 'Old Ben' coal can be sold in the broadest possible markets and enable us to give you steady work so that we both will benefit. Neither you nor your union can survive without work. We both know that.

"With your co-operation we can meet every problem that confronts us and can increase our working time into a well-balanced and satisfactory condition. Unless, however, you sit down with us at the proper time and in the best and frankest good fellowship help us work out a wage understanding that will be just, fair and profitable, we cannot expect any better working conditions than the unsatisfactory ones that now exist. Public opinion, world conditions and the old, old law of supply and demand are strongly arrayed against a continuance of the present cost of producing a ton of coal at Illinois mines."

Men in New River Petition for Lower Wage

THE United Mine Workers of America is losing ground rapidly in District 29, which embraces the New River field of West Virginia, and the new year finds the officers of the district making a desperate struggle to maintain their organization. Some defections have occurred in District 17, the larger of the two districts in the state, but nothing like that sustained in District 29, where the check-off has never been popular. The first of the year finds additional mines in the New River field resuming operations under the open shop.

The open-shop movement in the New River field has gained momentum not through any overtures or negotiations made by the operators but upon the initiative of the miners, such initiative invariably taking the form of petitions. The mine workers are willing to return to work at the scale prevailing prior to the adoption of what is known as the September, 1919, agreement. Owing to the lack of orders resumption has not always been possible, however,

In Raleigh County just before the holidays a peculiar difficulty arose. At the Wickham mine, of the Beckley Slope Coal Co., 150 men signed a petition expressing their willingness to return to work under the open-shop plan, and on that basis the mine was reopened on Dec. 19, 125 miners going to work. They elected their own weighman. A. C. McRoberts, who had filled the position when the mine was operated under a union agreement, asserted that he was entitled to retain it and carried his contention to the Circuit Court. The judge issued a temporary injunction restraining the company from interfering with his work.

Mines at Eccles, Cranberry, Skelton, Mabscott and other points are planning to resume operations early in the year on an open-shop basis.

Anthracite Miners Busily Writing Scales; One Scale Asks 60 Per Cent Increase

ENOCH WILLIAMS, who is secretary of District No. 1 of the United Mine Workers, has seventeen resolutions to be presented at the convention of Districts 1, 7, and 9 at Shamokin, Pa., Jan. 17. These are the three anthracite sections. The resolutions voice the desire of the mine workers to get increased pay, but one resolution wants the mine workers to go on strike if negotiations have not resulted in a contract by April 1.

District 1 presents a demand of $8 a day for the contract miner and a flat increase which would range from 20 to 40 per cent on present wages. Another resolution calls for the adoption of seniority rules at all collieries. Resolution No. 3 demands that all refuse be paid for at the adopted rate for coal and that the general grievance committees of the large coal companies be recognized. The board of conciliation must also be abolished.

The fourth resolution has no less than fifteen demands: An entire new wage scale arrangement untrammelled by references, such as now exist, to past scales dating back to 1902; the weighing of coal, 35c. per inch for all refuse, $7.50 for consideration miners, $6 per shift for laborers and a 20-per cent increase for inside and outside company hands; also a six-hour day.

Resolution No. 5 also bans the linked-up scales of past

years, but the proposers would nevertheless couple the past with the present by a 60-per cent increase. It would have the price of coal to the mine worker cut $1.25, would have the company pay men when they are laid idle for lack of supplies and would establish the six-hour day, in contradistinction to Resolution No. 9, which demands an all-around eight-hour day.

Abolition of docking for refuse is demanded in Resolution No. 10. Resolution No. 11 forbids miners to mine more than one shift a day or to mine coal on Sunday. The next resolution demands a 40-per cent increase in wages and a seven-hour working day. Another resolution requires the brakeman to linger around when repairs are made on locomotives, so that, it is speciously remarked, he may be aware of the condition of the same. Another demand is for the weekly pay day. The sixteenth resolution would give motormen $8 a day, motor brakemen $7 per day, all company hands $6.50 and track layers $7.

McVann, Retiring Secretary of Smokeless Association, Delivers Valedictory

ON RETIRING as secretary of the Smokeless Coal Operators' Association, Dec. 31, E. J. McVann sent the following "valedictory" to the membership of that association:

"Today marks the end of my service as secretary of the association. Before the hour of termination strikes it seems proper and fitting that I should express to those who have been my employers and associates during the past four strenuous years the feeling that I have about that employment and those associations.

"The years of my connection with the association, through the Washington Committee and the secretaryship, have added much to my experience and store of information about men and affairs and to my acquaintance in the coal industry. But valuable as all this is, I do not prize it so highly as the friendships I have made through my association with you. I cherish those friendships, and my earnest wish is that every one of them will survive the termination of my official connection and grow with the passage of the years.

"My new office will be in Suite 618, Munsey Building. Each and every member of the association will be welcome there at any time. May the new year bring you all the rich rewards that every good Smokeless man deserves."

Expect to Show That 50c. of Each Dollar Paid for Coal Represents Freight

TRAFFIC men throughout the United States are now concentrating on matters pertaining to the Interstate Commerce Commission's hearing which is expected to result in important reductions in rates. Opinion is crystallizing among them and there is a general feeling that the commission is certain to confine the larger reductions to the heavy, low-class commodities. It is not believed that material reductions will be ordered on high-class freight. The view is generally held that the reduction on the heavy commodities will not be less than the reductions made on grain, which averaged 16 per cent.

Practically the entire argument for the bituminous industry, which will be made by J. D. A. Morrow, will be predicated upon statistical data which are now being gathered. It is the intention to subdivide the dollar which the consumer pays for coal for the purpose of indicating its distribution. It is believed that the figures now being gathered will show that very little of the dollar is going to operators as profit and that more than 50c. of each dollar is going for transportation charges. Those portions of the dollar that go for labor, for materials and for other purposes will be set forth with fully authenticated figures to sustain them. Particular attention will be paid to the analysis of freight charges. An effort will be made to show in a more comprehensive manner than ever before just what the freight-rate factor means to the consumer of coal. This analysis will include figures as to the freight the mine operator has to pay on supplies and materials which he must bring to his operation.

Utility Coal Consumption in November 40,000 Tons More Than in October

COAL for public utilities represents the one shining example of a steady market for the coal man in these troublesome days. According to figures published by the Geological Survey, central power stations consumed 2,795,235 tons of coal in November, a gain of 40,000 tons over October and more than 200,000 over September. Fuel oil consumed by central stations decreased slightly, from 1,187,113 bbl. in October to 1,172,400 bbl. in November. Gas used decreased from 2,293,152 M. in October to 2,084,838 M. in November.

Power developed by fuels and water power made the usual seasonal increase, the average daily output of 121,500,000 kw.-hr. in November representing an increase of 6,100,000 kw.-hr. over October and 16,200,000 kw.-hr. over May, 1921.

The amount of coal consumed by electric public utilities in November was nearly 6½ per cent of the total production of coal in the United States in the same month. It would have required an additional daily consumption of about 56,000 tons of coal to generate the electricity produced by water power during November.

COAL CONSUMED BY PUBLIC UTILITY PLANTS, AUGUST-NOVEMBER 1921
(In net tons)

State	August	September	October	November
Alabama	23,462	31,357	28,023	22,409
Arizona	.....	.....	.....	.....
Arkansas	9,568	9,356	9,446	9,440
California	.....	.....	.....	.....
Colorado	28,974	28,254	35,910	36,918
Connecticut	60,095	62,974	67,215	64,528
Delaware	6,577	6,924	7,578	7,845
District of Columbia	19,120	18,547	19,163	19,392
Florida	1,748	1,826	1,898	1,924
Georgia	6,020	11,222	15,433	12,165
Idaho	.....	.....	.....	.....
Illinois	326,548	318,630	335,655	359,507
Indiana	152,095	151,754	161,547	167,890
Iowa	67,045	68,674	71,792	77,959
Kansas	17,322	15,847	19,188	19,795
Kentucky	38,842	38,724	41,239	41,668
Louisiana	10,431	10,401	9,844	9,772
Maine	779	3,315	4,354	2,104
Maryland	26,958	30,788	32,194	20,556
Massachusetts	107,921	118,801	120,816	115,964
Michigan	123,617	118,009	120,040	117,425
Minnesota	47,825	42,696	48,429	54,394
Mississippi	8,475	9,294	9,615	9,262
Missouri	82,288	81,251	86,216	96,081
Montana	3,476	3,650	3,610	3,707
Nebraska	36,038	35,936	36,039	35,800
Nevada	153	138	134	135
New Hampshire	3,473	4,983	5,200	4,367
New Jersey	93,356	93,302	100,344	108,425
New Mexico	2,678	3,359	2,785	2,582
New York	365,776	373,813	390,010	379,776
North Carolina	8,031	15,295	16,537	16,941
North Dakota	14,336	12,973	13,581	15,472
Ohio	249,812	235,397	263,460	285,526
Oklahoma	3,474	3,300	3,665	3,697
Oregon	.....	140	135	135
Pennsylvania	365,275	362,057	393,185	399,821
Rhode Island	7,870	8,685	10,911	11,495
South Carolina	7,874	9,699	10,601	9,726
South Dakota	7,518	7,265	7,581	7,771
Tennessee	20,263	20,245	22,686	21,620
Texas	19,185	17,718	18,497	18,262
Utah	.....	.....	.....	.....
Vermont	336	1,815	596	106
Virginia	48,315	50,007	53,717	44,882
Washington	2,287	2,340	2,355	1,912
West Virginia	79,549	83,633	87,657	87,491
Wisconsin	60,803	54,365	58,684	60,473
Wyoming	6,981	7,274	7,839	8,115
Totals	2,572,569	2,586,033	2,755,404	2,795,235

Coal Consumed by Railroads in September

COAL consumed by Class 1 railroads in road service in October, as reported by the Bureau of Statistics of the Interstate Commerce Commission, amounted to 9,489,979 net tons, compared with 10,866,978 in October, 1920. These figures include an equivalent coal tonnage for fuel oil consumed.

In the ten months ended with October these 164 companies consumed 83,311,863 tons of coal in 1921, compared with 101,642,402 tons in 1920, a decrease of about 18,330,000 tons, or 18 per cent. In the same periods the net revenue and non-revenue freight ton miles decreased from 377,000 million to 289,000 million, a drop of 24 per cent, and passenger business, expressed in passenger-train car miles, declined 3 per cent.

Senate Committee Holds Hearing on Proposed Oil Duty; American Producers Ask Tax, Railroads Oppose

HEARINGS to proponents and opponents of a duty on imported petroleum and products were given by the Senate Committee on Finance Thursday, Dec. 29, in considering the tariff revision bill, during which discussion was had as to the effect on coal of oil burning on vessels and in industries.

Oil producers from the mid-continent and other fields favored an oil duty ranging from $1 per barrel to a countervailing duty to equalize import and export rates imposed by foreign countries. Representatives of Southwestern railroads opposed the duty on the ground that Mexican oil was required because domestic supplies were not sufficient and that it had been found that oil was a cheaper locomotive fuel than coal.

The effect of the oil duty on the merchant marine was feared by Senators on the committee who pointed out that coal-burning ships could not compete with foreign ships using oil, as fuel oil was declared to be 40 per cent cheaper than coal as a fuel for vessel operation.

Senator Watson, of Indiana, pointed out that American shipping burning coal could not compete with foreign ships using oil as a fuel. He said that it was 40 per cent cheaper to operate ships by fuel oil than by coal.

W. H. Gray, of the National Association of Independent Oil Producers, favored giving the coal men a little protection, as he did not believe in shutting down coal mines in order to afford a market in the United States for oil from Mexico and Colombia.

"Is there any danger of that?" queried Senator Watson.

"There is," replied Mr. Gray, who said the use of oil as a fuel had affected coal mines; in some localities railroads operating through coal fields burned oil for fuel.

Rail Men Fear Duty Would Shut Out Mexican Oil

A. P. Thomson, of the railway executives, read a statement prepared by the general counsel of the Missouri, Kansas & Texas R.R. opposing an oil duty on the ground that it would shut out Mexican oil, which was needed for operation of railroads in the Southwest and on the Pacific Coast because sufficient contracts could not be entered into for long periods with American producers. The statement said that oil could be burned more economically in railroad operation than coal and that due to failure to secure supplies from the mid-continent fields at stated periods coal-burning locomotives which had been turned into oil burners had been reconverted back to coal burners.

It was further asserted in the statement that if the Southwestern roads had to rely on domestic oil they would be forced to return to coal, and as most of the lines were distant from coal mines it would require a long haul of the coal from the mines. It was said that the high price of coal had caused the use of oil on Southwestern and Pacific coast roads. Two thousand locomotives were equipped as oil burners and it would require $80,000,000 to convert them to coal burners. Additional locomotives and extra coaling stations costing $35,000,000 also would be required and the increasing cost of coal over oil and the greater cost of transporting coal over oil would mean an increased outlay of $34,000,000 annually by the roads. The loss on oil equipment due to conversion to coal would be $9,000,000. A restriction on Mexican oil imports would force the roads to return to coal burning.

Senator Curtis, of Kansas, proponent of an oil duty, replied that the Southwestern roads ran through oil fields of Kansas and Oklahoma, in which there was sufficient oil for railroad use during the period complained of. He said the roads objected to the duty because they had long-time oil contracts in Mexico. Senator Harreld, of Oklahoma, also an oil duty advocate, said the Southwestern roads produced oil through subsidiary companies and that the lower cost of oil as compared with coal and the increasing cost of coal had caused an increased use of oil by railroads.

In opposing the oil duty on behalf of the copper producers of the Southwest, D. A. Welch, of New York, said that the copper producers consumed 4,500,000 barrels of fuel oil a year and that coal was not now developed in sufficient quantity and suitable quality to meet the present demands of the copper producers. Oil produces a superior grade of copper than that which has been refined using coal as a fuel, he said.

British Sell Coal at Loss to Operate at Capacity; Americans to Compete

THAT British coal operators are selling their product at less than cost was an opinion expressed on Dec. 29 by Commerce Secretary Hoover. His information is that the British operators are willing to take these losses in an effort to increase their sales to the point where their mines can be operated at maximum capacity. Even so there would be a profit in the price they now are receiving for their coal, as conditions at British mines are peculiarly susceptible to the economies which come with quantity production.

Mr. Hoover stated further that the British are continuing to capture business in the West Indies, but that no plan has been evolved as yet to meet this competition. He stated that American coal producers have expressed perfect willingness to go as far as the British in selling coal below cost in an effort to hold this trade, but that more than the operators' profit has to be extirpated if British competition is to be met in the West Indies or at north Atlantic ports.

The export committees of the National Coal Association and of the American Wholesale Coal Association have been invited by F. R. Wadleigh to confer in the near future with Secretary Hoover in an effort to devise further plans for meeting British competition. The date for this conference has not been set, but both the National Coal Association and the Wholesale Coal Association have expressed willingness to take part in such a conference.

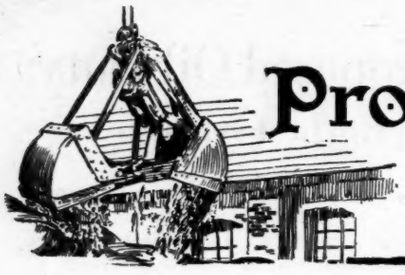
Hope practically has been abandoned of obtaining a voluntary reduction of tidewater rates. If such a reduction were confined entirely to coal going abroad, New England and other sections receiving coal in the coastwise trade would have an unquestioned claim to unjust discrimination. The committee of which W. V. Hardie, the director of traffic of the Interstate Commerce Commission, is chairman, has had no further meetings and at the time of this writing has none scheduled, which is taken as an indication that there is no immediate prospect of obtaining a rate reduction on tidewater coal prior to the general reduction likely to be put in effect about April 1 by an Interstate Commerce Commission order.

Lake Coal Shippers Plan Conference on Readjustment of Lake Rates

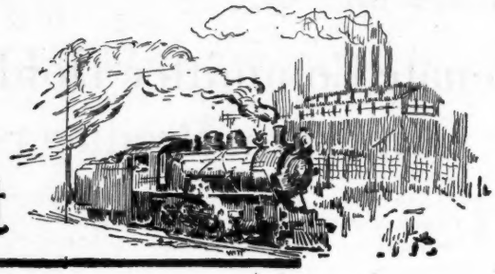
COAL operators interested in Lake shipping, dock operators and forwarders are planning to hold a conference early in the year for the purpose of arranging negotiations with Lake coal-carrying roads for the adjustment of the rates from mines to lower Lake docks for the next Lake coal shipping season, hoping to get the rate question out of the way so that shipping of Lake coal will not be delayed at the opening of navigation.

Last year shipments were held up for some time, as the 28c. reduction was not effective until early in May, and such coal as was shipped to the docks early had to stand the higher rates.

Shippers of Lake coal from Eastern mines contend that war-time advances in freight rates have created such a disparity in the rate relationships with mines in the Middle West that they cannot compete with all-rail coal to the Northwest unless reductions are made in the rates to the lower Lake ports.



Production and the Market



Weekly Review

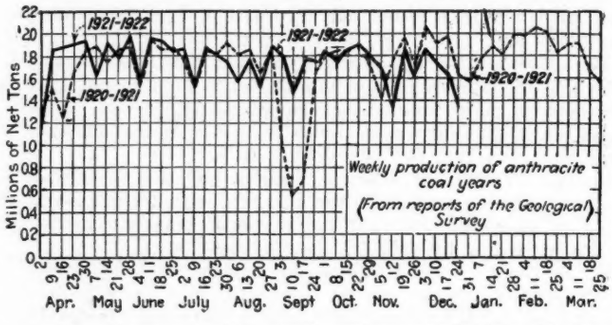
PRODUCTION of bituminous coal in the calendar year 1921 was about 408,000,000, according to the preliminary estimate of the Geological Survey. This is the lowest annual production since 1911 and is less than 1910. The output of soft coal in December was but 60 per cent of that in December a year ago and 12 per cent below the corresponding month in 1914.

Reaction from the holiday slump in bituminous coal production and prices is noticed in the reports for this week. Purchase of coal on the spot market was practically non-existent in the last three weeks of 1921. It has been resumed on a small scale with inquiry quite general for prices covering the first quarter. Buyers are, wisely enough, beginning to plan for the prospective miners' strike. So low, however, had production fallen and so readily can the market be supplied from the large mine capacity now available that so far prices have not been affected by the early 1922 inquiries.

Wage Cuts Continue in Non-Union Fields

COAL AGE index of spot prices of bituminous coal as the mines on Jan. 3 was 84, unchanged from the previous week. There were some changes, the increases being mainly along the Atlantic seaboard and the decreases in the West and Middle West. The price gains in the Eastern market were reactions from the low levels of previous weeks induced by an overloading of the market with distress coal.

Wage reductions in the non-union fields continue. More mines in the Somerest field are reported to have gone back to the 1917 scale. With the wage reductions made two weeks ago in southeastern Kentucky, operators in that field are giving evidence of an uneasy desire to get their coal back on the market. Wholesalers handling this coal in the Middle West fear the operators may flood the market with coal on consignment, to their own serious disadvantage. If this fear be realized there will be choice lots of high-grade coal on the bargain counter in Ohio, Michigan, Indiana and Western points before long. It is rather striking that the mine prices on western Kentucky coal are now above eastern Kentucky prices, the result of several modifications in freight rates favorable to the Western district.

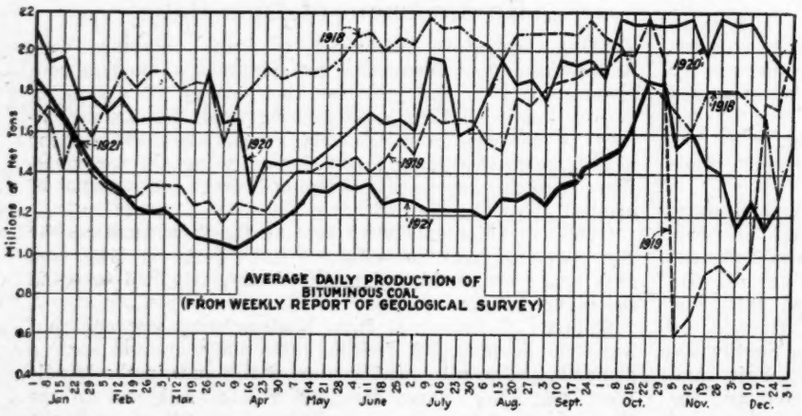

1921-1922
1920-1921
1921-1922
1920-1921
Millions of Net Tons
Weekly production of anthracite coal years
(From reports of the Geological Survey)
Apr. May June July Aug. Sept Oct. Nov. Dec. Jan. Feb. Mar.

Anthracite production during the week before Christmas dropped to 1,338,000 net tons, the lowest since the first week in April and below the corresponding week of last year. "Coal-burning weather" has, however, arrived and although stocks in the hands of retailers are generally reported as large, the next two months are expected to record a resumption of anthracite demand and production at least equal to the early autumn rate.

BITUMINOUS

Production increased slightly during the week ended Dec. 24, according to the Geological Survey. The total output was 7,468,000 net tons, as compared with 7,066,000 tons for the preceding week. Preliminary reports for the last week of the year indicate that production was greatly affected by the holidays. The December output per day is estimated at 1,200,000 tons, barely 60 per cent of that in December, 1922, and even 12 per cent below that in December, 1914, the lowest of any winter in the last eight years.

In comparison with lack of demand all other operating factors have been of negligible importance. Losses ascribed to labor have averaged 1.1 per cent recently. The depression, however, was not as severe in some districts as in others. The best working time reported from the territory


1918
1920
1921
1919
Millions of Net Tons
AVERAGE DAILY PRODUCTION OF BITUMINOUS COAL
(FROM WEEKLY REPORT OF GEOLOGICAL SURVEY)
Jan Feb Mar Apr May June July Aug. Sept. Oct. Nov. Dec.

Estimates of Production

(Net Tons)

Week Ended	1921	1920
BITUMINOUS COAL		
Dec. 10 (*b*)	7,312,000	12,865,000
Dec. 17 (*b*)	7,066,000	12,156,000
Dec. 24 (*a*)	7,468,000	9,686,000
Daily average	1,245,000	1,937,000
Calendar year	401,051,000	543,049,000
Daily average calendar year	1,330,000	1,795,000
ANTHRACITE		
Dec. 10	1,703,000	1,933,000
Dec. 17 (*b*)	1,664,000	1,998,000
Dec. 24 (*a*)	1,338,000	1,641,000
COKE		
Dec. 17 (*b*)	127,000	334,000
Dec. 24	118,000	272,000
Calendar year	5,405,000	20,547,000

(*a*) Subject to revision. (*b*) Revised from last report

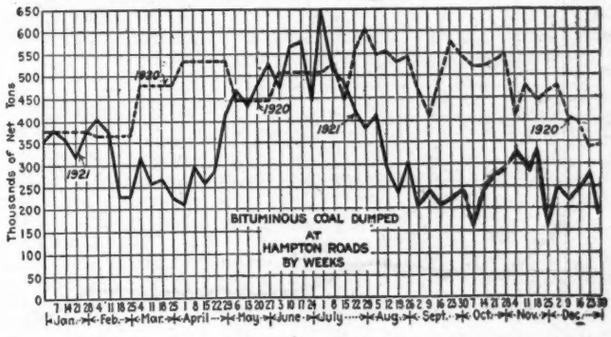
east of the Mississippi was in Alabama, where the mines operated 59.6 per cent of full time. Fields in which the average running time exceeded 40 per cent were Westmoreland, Somerset, Cumberland-Piedmont, the Panhandle of West Virginia, Virginia and Alabama, and certain of the trans-Mississippi districts. The depression was most pronounced in southern Ohio, New River and Kanawha, in none of which did the mines reporting average 20 per cent of full time. New River operators report a slight improvement over the condition of complete prostration indicated by their reports early in December.

The coal trade is crystal gazing into the future and a feeling is prevalent that better things are in store. Distress quotations are fewer and consumer interest in forward buying is growing. Prices have not as yet risen to this better tone and the non-union districts are making the most of their advantage in the way of mine costs.

Labor developments point to breakers ahead. The refusal of Ohio and Pittsburgh operators to treat with the United Mine Workers in the Central Competitive Field conference presages dealings with individual district miners' organizations, and a strike on the preservation of the check-off and collective bargaining appears to be inevitable. An increasing number of mines are returning to the 1917 scale, following the action of the men in the southeastern Kentucky and Tennessee fields. More mines have closed in the Midwest, operators preferring to remain closed until demand again sustains production.

Retail stocks of soft coal are still topheavy, although colder weather is working off some of this coal. Steam sizes are increasingly strong and will be until domestic coal is in better call, enabling producers to make more screened sizes.

The New England market is in better shape, not from any improvement in demand but due to mine curtailment, which has reduced the tonnage at the Roads. "Market" cargoes are less frequent and Pocahontas has regained its price of $4.60@$4.75.



Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F. O. B. Mines

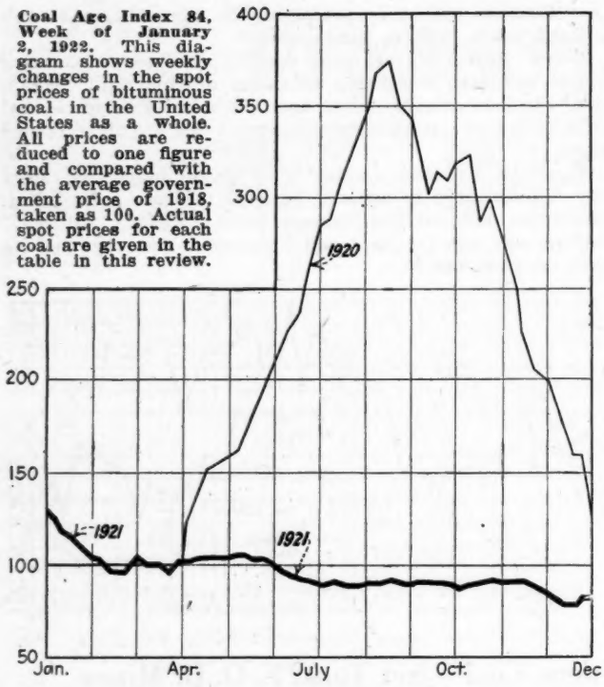
Low-Volatile, Eastern	Market Quoted	Dec. 5 1921	Dec. 19 1921	Dec. 26 1921	Jan. 2 1922†
Pocahontas lump	Columbus	$3.75	$3.60	$3.55	$3.40@3.75
Pocahontas mine run	Columbus	2.25	2.15	2.15	2.00@2.25
Pocahontas screenings	Columbus	1.55	1.55	1.65	1.50@1.75
Pocahontas lump	Chicago	3.85	3.10	3.10	2.50@3.75
Pocahontas mine run	Chicago	2.25	2.25	2.40	**2.00@3.00**
Pocahontas lump	Cincinnati	3.10	3.25	3.25	3.00@3.50
Pocahontas mine run	Cincinnati	....	2.10	2.10	*1.85@2.25*
Pocahontas screenings	Cincinnati	....	1.40	1.65	*1.35@1.75*
*Smokeless mine run	Boston	4.80	4.80	4.55	**4.60@4.75**
Clearfield mine run	Boston	1.80	1.80	2.05	1.80@2.35
Cambria mine run	Boston	2.35	2.35	2.50	2.25@2.70
Somerset mine run	Boston	1.85	1.85	1.80	1.60@2.00
Pool 1 (Navy Standard)	New York	3.00	3.00	3.05	**2.90@3.40**
Pool 1 (Navy Standard)	Philadelphia	3.00	3.00	3.00	2.75@3.25
Pool 1 (Navy Standard)	Baltimore	2.40	2.35	2.35	**2.40**
Pool 9 (Super. Low Vol.)	New York	2.30	2.20	2.30	**2.20@2.45**
Pool 9 (Super. Low Vol.)	Philadelphia	2.35	2.30	2.30	2.10@2.50
Pool 9 (Super. Low Vol.)	Baltimore	2.05	2.15	2.20	2.15@2.25
Pool 10 (H. Gr. Low Vol.)	New York	2.05	2.00	2.00	**1.90@2.25**
Pool 10 (H. Gr. Low Vol.)	Philadelphia	2.05	2.00	2.00	1.90@2.10
Pool 10 (H. Gr. Low Vol.)	Baltimore	1.85	2.00	2.00	2.00
Pool 11 (Low Vol.)	New York	1.70	1.70	1.75	*1.50@1.80*
Pool 11 (Low Vol.)	Philadelphia	1.85	1.70	1.70	1.60@1.80
Pool 11 (Low Vol.)	Baltimore	1.75	1.75	1.85	*1.75*
High-Volatile, Eastern					
Pool 54-64 (Gas and St.)	New York	1.55	1.55	1.50	1.40@1.60
Pool 54-64 (Gas and St.)	Philadelphia	1.70	1.55	1.55	1.45@1.70
Pool 54-64 (Gas and St.)	Baltimore	1.60	1.50	1.40	**1.40@1.50**
Pittsburgh sc'd gas	Pittsburgh	2.65	2.65	2.65	2.60@2.70
Pittsburgh mine run (St.)	Pittsburgh	2.15	2.15	2.15	2.10@2.20
Pittsburgh slack (Gas)	Pittsburgh	1.35	1.55	1.65	**1.75@1.85**
Kanawha lump	Columbus	3.00	2.85	2.85	*2.65@3.00*
Kanawha mine run	Columbus	1.90	1.80	1.90	*1.75@1.95*
Kanawha screenings	Columbus	1.00	1.05	1.15	**1.25@1.50**
Kanawha lump	Cincinnati	2.75	2.65	2.90	*2.75*
Kanawha mine run	Cincinnati	1.65	1.35	1.30	**1.35@1.50**
Kanawha screenings	Cincinnati	.95	1.25	1.15	**1.00@1 50**
Hocking lump	Columbus	3.10	2.95	3.05	*2.85@3.15*
Hocking mine run	Columbus	1.95	1.90	1.95	*1.85@2.00*
Hocking screenings	Columbus	$1.15	$1.15	$1.20	**$1.25@1.50**
Pitts. No. 8 lump	Cleveland	3.05	3.00	3.00	**2.85@3.25**
Pitts. No. 8 mine run	Cleveland	2.00	2.00	1.95	**1.95@2.05**
Pitts. No. 8 screenings	Cleveland	1.50	1.60	1.70	**1.90@2.00**
Midwest					
Franklin, Ill. lump	Chicago	3.80	3.80	3.65	**3.50@4.05**
Franklin, Ill. mine run	Chicago	2.75	2.90	2.90	2.75@3.00
Franklin, Ill. screenings	Chicago	1.75	2.05	2.10	1.95@2.25
Central, Ill. lump	Chicago	3.35	3.10	3.10	2.75@3.50
Central, Ill. mine run	Chicago	2.25	2.50	2.50	2.25@2.75
Central, Ill. screenings	Chicago	1.70	1.80	2.00	*1.75@2.10*
Ind. 4th Vein lump	Chicago	3.35	3.35	3.35	3.00@3.75
Ind. 4th Vein mine run	Chicago	2.75	2.75	2.70	*2.40@2.75*
Ind. 4th Vein screenings	Chicago	1.90	2.15	1.75	**1.90@2.25**
Ind. 5th Vein lump	Chicago	2.80	2.80	2.95	2.60@3.25
Ind. 5th Vein mine run	Chicago	2.45	2.45	2.45	*2.15@2.40*
Ind. 5th Vein screenings	Chicago	1.50	1.65	1.80	1.60@2.00
Standard lump	St. Louis	2.85	2.60	2.80	*2.50@2.75*
Standard mine run	St. Louis	1.95	1.90	1.90	*1.85@1.90*
Standard screenings	St. Louis	1.15	1.25	1.40	**1.50@1.75**
West Ky. lump	Louisville	2.60	2.85	2.75	**2.60@3.10**
West Ky. mine run	Louisville	1.75	1.75	1.75	**1.75@2.00**
West Ky. screenings	Louisville	.95	1.40	1.85	*1.60@1.75*
South and Southwest					
Big Seam lump	Birmingham	3.65	3.65	3.65	*2.75@4.00*
Big Seam mine run	Birmingham	2.00	2.10	2.10	1.90@2.30
Big Seam (washed)	Birmingham	2.30	2.15	2.15	2.00@2.30
S. E. Ky. lump	Louisville	3.00	2.85	2.85	2.75@3.00
S. E. Ky. mine run	Louisville	2.05	1.70	1.50	**1.50@1.65**
S. E. Ky. screenings	Louisville	.95	1.15	1.45	*1.25@1.40*
S. E. Ky. lump	Cincinnati	3.15	3.15	3.15	*2.75@3.25*
S. E. Ky. mine run	Cincinnati	1.75	1.40	1.30	**1.35@1.60**
S. E. Ky. screenings	Cincinnati	.85	1.15	1.25	*1.00@1.40*
Kansas lump	Kansas City	5.00	5.00	5.00	5.00
Kansas mine run	Kansas City	4.10	4.10	4.10	4.00@4.25
Kansas screenings	Kansas City	2.50	2.50	2.50	2.50

*Gross tons, f.o.b. vessel, Hampton Roads.
†Advances over previous week shown in **heavy type**, declines in *italics*.

Current Quotations—Spot Prices, Anthracite—Gross Tons, F. O. B. Mines

	Market Quoted	Freight Rates	Dec. 19, 1921 Independent	Dec. 19, 1921 Company	Dec. 26, 1921 Independent	Dec. 26, 1921 Company	Jan. 2, 1922† Independent	Jan. 2, 1922† Company
Broken	New York	$2.61	.....	$7.60@$7.75	.....	$7.60@$7.75	.....	$7.60@$7.75
Broken	Philadelphia	2.66	$7.50@$7.75	7.75@ 7.85	$7.50@$7.75	7.75@ 7.85	*$6.75@$7.50*	7.75@ 7.85
Egg	New York	2.61	6.50@ 7.25	7.60@ 7.75	7.00@ 7.25	7.60@ 7.75	*6.50@ 7.00*	7.60@ 7.75
Egg	Philadelphia	2.66	7.25@ 7.75	7.75@ 7.85	7.00@ 7.25	7.75@ 7.85	7.00@ 7.25	7.75@ 7.85
Egg	Chicago	5.63	7.50*	7.15*	7.40*	6.95*	7.40*	6.95*
Stove	New York	2.61	8.00@ 8.25	7.90@ 8.10	8.00@ 8.25	7.90@ 8.10	*7.85@ 8.25*	7.90@ 8.10
Stove	Philadelphia	2.66	8.50@ 8.75	8.00@ 8.35	8.25@ 8.50	8.05@ 8.25	8.25@ 8.50	8.05@ 8.25
Stove	Chicago	5.63	7.75*	7.40*	7.60*	7.20*	7.60*	7.20*
Chestnut	New York	2.61	8.00@ 8.25	7.90@ 8.10	8.00@ 8.25	7.90@ 8.10	*7.85@ 8.25*	7.90@ 8.10
Chestnut	Philadelphia	2.66	8.50@ 8.75	8.05@ 8.25	8.25@ 8.75	8.05@ 8.25	*8.25@ 8.50*	8.05@ 8.25
Chestnut	Chicago	5.63	7.50*	7.40*	7.60*	7.20*	7.60*	7.20*
Pea	New York	2.47	4.75@ 5.50	6.05@ 6.45	4.50@ 5.00	6.05@ 6.45	*4.00@ 5.00*	6.05@ 6.45
Pea	Philadelphia	2.38	4.25@ 5.00	6.15@ 6.25	4.50@ 5.00	6.15@ 6.25	*4.25@ 5.00*	6.15@ 6.25
Pea	Chicago	5.63	6.10*	5.80*	6.10*	5.60*	6.10*	5.60*
Buckwheat No. 1	New York	2.47	2.25@ 2.75	3.50	2.25@ 2.75	3.50	*2.00@ 2.75*	3.50
Buckwheat No. 1	Philadelphia	2.38	2.25@ 3.00	3.50	2.25@ 3.00	3.50	*2.25@ 2.75*	3.50
Rice	New York	2.47	1.60@ 2.00	2.50	1.60@ 2.00	2.50	**1.50@ 2.25**	2.50
Rice	Philadelphia	2.38	1.75@ 2.00	2.50	1.75@ 2.00	2.50	1.75@ 2.00	2.50
Barley	New York	2.47	1.00@ 1.25	1.50	1.00@ 1.50	1.50	**1.35@ 1.50**	1.50
Barley	Philadelphia	2.38	1.00@ 1.25	1.50	1.00@ 1.25	1.50	1.00@ 1.25	1.50
Birdseye	New York	2.47	.....	2.50	.....	2.50	.....	2.50

*Net tons, f.o.b. mines.
†Advances over previous week shown in heavy type, declines in *italics*.



Coal Age Index 84, Week of January 2, 1922. This diagram shows weekly changes in the spot prices of bituminous coal in the United States as a whole. All prices are reduced to one figure and compared with the average government price of 1918, taken as 100. Actual spot prices for each coal are given in the table in this review.

The all-rail movement to New England was 2,627 cars during the week ended Dec. 17, a slight increase when compared with the previous week. The bulk of this tonnage is now moving to New England railroads and on commercial contracts made last spring. It is difficult to see any future business in a large slice of the all-rail territory with the existing freights and union costs which are so easily undercut by the water-borne coals.

Hampton Roads dumpings were 175,517 net tons in the week ended Dec. 28, as compared with 286,862 in the preceding week. Exports are practically nil, as shippers are powerless to meet the British c.i.f. prices. Bunkers are holding well.

ANTHRACITE

Production slipped down to 1,338,000 net tons during the week ended Dec. 24, a decline of 326,000 tons, or 19.6 per cent. The arrival of colder weather with the curtailed production was about all that saved independent domestic prices from going lower. Steam sizes are improved also although none of these is selling at a premium.

The retailers must work off heavy stocks before mine operations improve, but this time will, of course, be hurried by a continuance of the present seasonable weather. Many independent customers are registering uneasiness over the maintenance of the premiums and are showing an interest in the company product. The latter are now evincing a disposition to take on some of this new business.

COKE

Curtailed working time during the week ended Dec. 24 resulted in production dropping back from 127,000 to 118,000 net tons. The Connellsville output registered a decline of 8,600 tons.

More first-quarter contracts have been closed. The disposition of this business will be more significant than usual this year, as inquiring customers will decide between beehive and byproduct offerings. The spot market remains inactive, with prices soft.

Foreign Market And Export News

Coal Paragraphs from Foreign Lands

GERMANY—Production of coal in the Ruhr region during the week ended Dec. 19 was 1,845,000 metric tons, according to a cable to COAL AGE. This is an increase of 214,000 tons, as compared with the week preceding.

ITALY — October imports of coal, according to unofficial figures reaching the Department of Commerce, were as follows: England, 416,152 tons; Westphalia, 118,700 tons; United States, 4,000 tons.

The price of Cardiff steam first is quoted on the Genoa market at 38s., according to a cable to COAL AGE, as compared with 38s. 9d. late in December.

SWEDEN—Imports of coal and coke during the week ended Dec. 13 were 14,225 tons, compared with 10,875 during the previous week. The imports came exclusively from Great Britain and consisted of 11,900 tons of coal and 2,325 tons of coke.

SPAIN—Owing to the belief that the railway companies and other public services will be obliged by government orders to use Spanish coal the price of the latter has strengthened. Latest quotations are: Large, 90 pesetas; small, 70 pesetas. The peseta equals about 13c. in United States currency at the present time.

POLAND.—All restrictions relating to the trade in coal and briquets are removed for all of Poland, according to *Commerce Reports*. All treasury and governmental charges relating to the mining, sale, and consumption of coal, coke and briquets will be paid by respective treasury branches as designated in laws and orders on taxation.

Less Coal at the Roads; Lower Transportation Costs Are Necessary

Business moved more steadily during the last week of the year, although export cargoes were scarce. The fact that many mines practically closed down for the holidays gave the supplies at port the appearance of moving with a greater rapidity than usual, although business, for the most part, showed no change from the dullness which has characterized it during the month.

While the business of the immediate present has not been such as to give basis for a more than indifferent forecast, still dealers believe that better times are ahead. The belief is also expressed that with a reduction of as much as $1 in freight rates, and a slight reduction in ocean rates, Amercian coal shippers can compete with the British, which are rapidly gaining ground. Several small cargoes of British coal have recently come into this port, serving as ballast for vessels coming to pick up return cargoes from America.

Prices showed a slight reduction during the latter part of December. Pool 1 has been sold in considerable quantities for as low as $4.65, while some Pool 2 has been offered for $4.45@$4.50. Practically no sales have been made in grades lower than these.

Amount and Value of British Coal Exports, November and First Eleven Months of 1913, 1920 and 1921

	November					
	Quantity (Tons)			Value		
	1913	1920	1921	1913	1920	1921
Anthracite	255,959	70,099	233,156	£200,746	£264,550	£538,074
Steam	4,322,462	1,097,869	2,757,616	3,039,010	4,673,913	3,540,244
Gas	936,829	160,339	454,086	603,480	619,535	623,501
Household	140,129	10,017	38,009	94,444	34,937	51,704
Other sorts	258,025	22,400	110,997	162,904	88,549	124,496
Total	5,913,404	1,360,724	3,593,864	£4,100,584	£5,681,484	£4,878,019

	Eleven Months Ended November					
	Quantity (Tons)			Value		
	1913	1920	1921	1913	1920	1921
Anthracite	2,726,893	1,472,271	1,241,789	£2,177,780	£4,707,111	£3,193,222
Steam	49,030,578	18,371,452	15,183,794	34,613,303	74,930,524	27,077,433
Gas	10,547,038	1,911,580	3,065,151	6,516,605	7,581,024	5,933,149
Household	1,635,335	65,935	172,631	1,074,563	187,352	300,011
Other sorts	3,230,821	808,539	688,025	2,015,734	2,876,446	1,081,815
Total	67,170,665	22,629,777	20,351,390	£46,397,985	£90,282,457	£37,585,630

British Output Touches Highest Point of Year

With Falling Prices Pits Near Full Time Operation—French Mines Crippled by High Costs Which Render Them Unable to Compete at Home with British Coal

Production in the United Kingdom continues to increase. The output for the week ended Dec. 17 was 5,027,000 gross tons, according to a cable to *Coal Age*, 172,000 tons in excess of the preceding week's figure and the highest for the year.

Pits in Wales and northern England are gradually getting back to full-time operation as a consequence of the lower prices. The majority of the large collieries in Durham and Northumberland are on full-time and Scotland is improving, owing to the increased export demand.

Another inquiry from India is for 300,000 tons of Welsh Admiralty and Monmouthshire coal for shipment to Indian ports. This inquiry comes from private sources. The Bombay and Baroda Ry. which, two months ago, contracted for 175,000 tons before May, has increased this figure by 60,000 tons. The Norwegian State Rys. has placed a contract in Northumberland for 35,000 tons of steam coal for shipment during January and February. Contracts have also been placed in Durham by the Copenhagen municipal gas and electric works for 10,000 tons of steam coal to be shipped during the first three months of 1922.

The returning export markets have brought to the fore the necessity for even greater production. A conference for discussing a resumption of the third shift, which adjourned over the holidays, will be called again next week. The percentage of miners returning to work immediately after the holidays is much larger than usual.

The managers of all the principal railway companies in Great Britain held a further meeting recently to consider the possibilities of a reduction of freight rates. The question was examined in full detail, particularly in relation to the requests from the coal owners for modified charges. Mine owners contended that the cheapening of coal for industrial and domestic purposes could only be obtained by a substantial cut in transportation rates. No decision has yet been reached.

The successful invasion of the West Indies by the British has followed their underbidding American houses by as much as $1 per ton. There is no doubt but that British coal is being sold there at a loss in order to create a demand which will enable producers to operate on a maximum scale and thus reduce their costs.

Further shipments of Welsh coal to the American seaboard are disturbing those markets. Ordinarily this ballast coal would make little difference in the trade but on a dull market it is noticeable at once.

French Industry In Bad Shape; Price Cuts Imperative

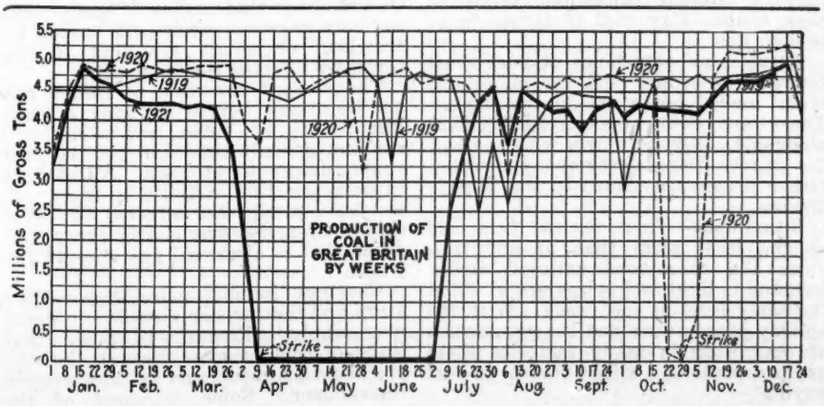
The one-day strike of the French miners organized as a protest against the high price of French coal, and the consequent unemployment among miners, has drawn attention to the difficult situation of the French coal industry. At the end of October this year there were 1,560,000 tons of coal waiting at the pit heads, 800,000 tons being in the Nord and the Pas de Calais. Nearly two-thirds of the month's production remained in stock. The mines in the Center and East lowered their prices as from October, with the result that a part of the stock has been liquidated; the situation in the North, however, grows worse and worse. The local causes are the high prices, the usual difficulties of transport by land and water in winter, and the crisis through which French industry is passing. The international causes are threefold: (1) Coal sent by Germany as reparations; (2) Coal from the Sarre, which is sent to France rather than to Germany on account of the collapse of the mark; (3) the considerable fall in price in English coal, which in spite of the low rate of the franc costs less in France than French coal.

It is generally considered that the last reason is the most important. A year ago no English coal was being imported, but the cut in the miners' wages now enables English coal to enter into serious competition with French coal.

Before the war, France consumed about 60,000,000 tons yearly, and produced about 40,000,000. Present consumption amounts to about 55,000,000 tons while production is 30,000,000. The following amounts are now being imported into France: German reparations coal, 12,000,000 tons per year; Sarre coal, 5,000,000 tons per year and English coal (since October) 850,000 tons a month, i.e., 10,000,000 tons per year.

British coal is being imported in ever-increasing quantities. It is pointed out that in order to render British competition less serious, the remedy is not to charge increased customs duties, as such a remedy would have the effect of maintaining the high price of French coal.

The only remedy would appear to be to reduce the price of French coal. For this, a reduction of profits would not be sufficient; either a reduction of wages, or an increase of production for the same wages, would also have to be considered.



Pier and Bunker Prices, Gross Tons

(Foreign Bunker Quotations by Cable to Coal Age)

	Dec. 24	Dec. 31†
PIERS		
Pool 9 New York	$5.25@$5.50	**$5.40@$5.60**
Pool 10, New York	5.00@ 5.25	**5.10@ 5.30**
Pool 9, Philadelphia	5.50	5.50
Pool 10, Philadelphia	5.00@ 5.40	5.00@ 5.40
Pool 71, Philadelphia	5.50@ 5.75	5.50@ 5.75
Pool 1, Hamp. Rds.	4.50@ 4.75	*4.50@ 4.70*
Pools 5-6-7 Hamp Rds	4.30	*4.25*
Pool 2, Hamp. Rds.	4.50	4.50
BUNKERS		
Pool 9, New York	5.55@ 5.80	**5.70@ 5.90**
Pool 10, New York	5.30@ 5.55	**5.40@ 5.60**
Pool 9, Philadelphia	5.50@ 5.85	5.50@ 5.85
Pool 10, Philadelphia	5.35@ 5.50	5.35@ 5.50
Pool 1, Hamp. Rds.	4.75	**4.80**
Pool 2, Hamp. Rds.	4.50	**4.60**
Welsh, Gibraltar	40s. f.o.b.	40s. f.o.b.
Welsh, Rio de Janeiro	65s. f.o.b.	65s. f.o.b.
Welsh, Lisbon	45s. f.o.b.	45s. f.o.b.
Welsh, La Plata	62s.6d. f.o.b.	62s.6d. f.o.b.
Welsh, Marseilles	125fr. f.o.b.	125fr. f.o.b.
Welsh, Genoa	40s. t.i.b.	40s. t.i.b.
Welsh, Madeira	42s.6d. f.a.s.	42s.6d. f.a.s.
Welsh, Teneriffe	42s.6d. f.a.s.	42s.6d. f.a.s.
Welsh, Malta	45s. f.o.b.	45s. f.o.b.
Welsh, St. Michaels	60s. t.i.b.	60s. t.i.b.
Welsh, Las Palmas	42s.6d. f.a.s.	42s.6d. f.a.s.
Port Said	51s.6d. f.o.b.	51s.6d. f.o.b.
Belgian, Antwerp	40s. f.o.b.	40s. f.o.b.
Alexandria	45s.	*42s.*
Bombay	38 rupees	38 rupees
Capetown	42s.6d.	42s.6d.

C.I.F. Prices, American Coal

(In Gross Tons)

	—Dec. 24— Low Vol.	High Vol.	—Dec. 31†— Low Vol.	High Vol.
French Atlantic	$8.65	$8.85	*$8.60*	*$8.80*
West Italy	8.70	8.85	8.70	8.85
The Plate	8.80	8.95	.....	.....
Havana	6.70	6.95	*6.50*	*6.75*

These quotations are purely nominal and as far as can be learned, no business is being done in these markets.

Current Quotations British Coal f.o.b. Port, Gross Tons

Cardiff:	Dec. 24	—Dec. 31†—
Admiralty, Large	26s.	25s.6d.@26s.6d.
Steam, Smalls	19s.6d.	*18s.6d.@19s.6d.*
Newcastle:		
Best Steams	25s.	*23s.6d.@24s.*
Best Gas	22s.	*21s.6d.@22s.*
Best Bunkers	21s.9d.	*21s.@22s.*

† Advance over previous week shown in heavy type, declines in *italics*.

Export Clearances, Week Ended Dec. 29, 1921

FROM HAMPTON ROADS:

	Tons
For Cuba:	
Br. Schr. Harry A. McLennon, for Cienfuegos	1,046
Nor. S.S. Trafalgar, for Media Luna	829
Nor. S.S. Snar, for Havana	1,946
FROM PHILADELPHIA:	
For Egypt:	
Br. S.S. Mortlake, for Alexandria	——

Hampton Roads Pier Situation

	—Week Ended— Dec. 22	Dec. 29
N. & W. Piers, Lamberts Point:		
Cars on hand	1,415	1,757
Tons on hand	74,937	97,718
Tons dumped	118,798	72,684
Tonnage waiting	7,250	2,300
Virginian Ry. Piers, Sewalls Point:		
Cars on hand	907	922
Tons on hand	52,250	62,500
Tons dumped	69,998	50,033
Tonnage waiting	.....	19,435
C. & O. Piers, Newport News:		
Cars on hand	827	864
Tons on hand	41,350	43,200
Tons dumped	67,331	33,995
Tonnage waiting	915	1,537

Reports From the Market Centers

New England

BOSTON

Market Extremely Quiet—Prices Stable —Less Forcing by Smokeless Agencies —Trade Looking Forward to Wage Adjustments—Anthracite Dormant.

Bituminous—There is so little business that salesmen are taking a recess. Fewer quotations are heard and buyers are not interested. Reserves are large. Cargoes continue to be divided at the various rehandling points, but for the most part those shipments are conservatively managed and the coal is not needlessly sacrificed.

The range of prices has varied very little the past few weeks. The up-set figure for the best Pocahontas and New River is $6.25 on cars, Boston, and $4.60 @$4.75 is about the level f.o.b. vessel at Norfolk and Newport News. On the Pennsylvania grades also there is little change. Other prices, f.o.b. mines, are shown in the Weekly Review.

Receipts all-rail are very light, and aside from railroad fuel and coal coming forward commercially on last spring's contracts there is next to nothing moving.

It is gratifying to notice less "market" coal coming from Hampton Roads. Accumulations at the loading piers have been worked down, and on the part of operators there is less inclination to mine coal except on a more assured market. Slow collections have a bearing on this, for it is generally understood that some of the agencies have been taking rather wide chances on credits. However, the larger buyers who have been served with Pocahontas and New River coals this season are accepting it as a fact that during the coming year the prices of these grades will bar coals from central Pennsylvania.

The rate differentials are such and mining costs in the union districts are so high that receipts here of Pennsylvania coals by water are very small indeed. A few cargoes seep in through out of the way ports where shoal water would very much increase the freighting cost on the smokeless coals, but aside from that kind of trade and a certain tonnage moving on contract to railroads east of Boston and Portland there is almost nothing doing.

Anthracite—While certain of the companies have enough business in hand for stove and chestnut sizes to keep them going for a few weeks, it is clear that egg and pea are being absorbed only with great difficulty and much easing of price. The larger shippers are of course putting the latter sizes into storage, but individuals are slashing circular prices in their efforts to avoid piling up.

New England is taking only a minimum tonnage now. The retail dealers are well stocked, and until the householder takes more coal than he has hitherto the dealer will buy only sparingly.

The retail trade is disturbed over lowered prices on pea. From $13 per net ton delivered, the published price has been reduced to $10.50 to work off surplus stocks accumulated while stove and chestnut were scarce.

Tidewater—East

NEW YORK

Domestic Demand Slumps Further—Premiums Disappear—Curtailed Mining Cleans Up Surplus Coals—Bituminous Market Quiet—Quotations Stable.

Anthracite—Demand is quiet and comparatively little coal is being mined. Curtailment of mining prevents independent prices from falling further. The cold wave the last two days of the week caused a slight flurry, retail dealers reporting the receipt of many orders.

The Christmas spirit prevailed throughout the week. Because of weather conditions early in the week consumption was small and it was useless for salesmen to circulate among the trade with the view of selling coal. Nowadays, as one salesman put it, the soliciting of an order usually results in an argument.

Nothing short of a continued spell of real winter temperatures will bring much activity. Retail dealers are doing little. The trade does not look for a rush of orders. Dealers are not anxious to have their bins filled with high priced coal on April 1, when the operators as a rule reduce their prices 50c.

One dealer said the market had not been so quiet at this time of the year in the past thirty years. Most of the mines were idle during the week and it was said that many of them would not resume operations until demand improved.

The month was unusually quiet in sharp contrast with December, 1920.

Stove and chestnut sizes which were in heavy call during the past several months are now in ample supply but are not accumulating like egg and pea coals.

Premiums on independent coals have disappeared and it was reported that some of the larger companies were shaving the circular prices on certain of their coals. Egg coal continues to be broken up.

There is an abundance of buckwheat between Tidewater and the mines and many loaded boats are in the harbor. These are being quoted $4.75@$5.25 alongside. Barley is firm with the better grades bringing company circular. Other prices are shown in the Weekly Review.

Bituminous—There is less free coal at the local piers than at any time since the threatened railroad strike. Demand is light and prices are at about the same level as last week. With the holiday season over and the resumption of operations in many factories there are prospects of a slight revival in coal buying.

Even the comparatively small quantity of coal at the local docks is sufficient to meet all demands. Contract coals are kept moving.

There have been many price inquiries during the week. Some new year orders are reported to have been placed at $2.25@$2.50 for Pool 10 and around $2.75 for Pool 9.

A fair tonnage of Southern coals continues to come here and is apparently being disposed of without much trouble. Quotations for Pocahontas or New River range $5.85@$6, f.o.b. vessel, this harbor.

BUFFALO

Trade Remains Stagnant—All Coal Selling Much Slower Than Usual at This Season—No Early Improvement Seen.

Bituminous—The trade is as quiet as ever. Consumers are not buying more than they need for present consumption, often because they have no more storage capacity. The consumers know that they are not likely to get their coal much, if any, cheaper than at present, so they are usually willing to buy as far as they are able to take care of the coal.

The coming of more severe weather has not increased the demand. The stories of canceled orders and coal thrown on the market at almost any price continue. They are always heard when the market is extremely dull.

It is said every class of bituminous consumers is now heavily stocked. If a railroad does not keep up its big piles at certain points as formerly it will be found that it has the coal somewhere. For such reasons the shippers have given up predicting a stir just before the April suspension for the fixing of wages.

In general it is held that a suspension of considerable length will be a good thing. If wages are cut down to a living basis the operator and all members of the trade are going to lose less on account of a strike, than to continue present wages, if they do not make anything by it. Prices will not be affected unless the suspension is lengthy. Meanwhile quotations remain at $2.75 for Youghiogheny gas lump, $2.50 for Pittsburgh and No. 8 steam lump, $2.25 for Allegheny Valley or other mine run, and $1.50@$1.75 for slack.

Anthracite—The colder weather does not help the demand much. This means that it is about as dull as it ever is at this time of the year. Nobody can give a really adequate reason for the refusal of consumers to buy. Some say that they have not yet given up the idea that prices are to come down soon. Others think that money is scarce and so many more consumers are buying by the load or single ton that it has seriously affected the movement.

The present condition of things has not been seen before in many a year. Miners are on strike and mines are running on half time and yet the coal supply does not run down. All storage capacity in this vicinity is taken up, the Lake trade was affected by overshipments and pretty nearly every condition that is abnormal has entered the trade..

Chestnut is now more scarce than stove and the furnace sizes are in great over-supply. Remark is made that loads of coal passing through the city are about as uncommon as they were in midsummer. Some members of the

trade express the opinion that the anthracite scale of wages will be harder to settle than the bituminous and they look for a long suspension of mining.

Coke—Furnaces are running at about half capacity, with no promise of increase right away. Byproduct coke plants about keep pace with this activity. Jobbers quote 72-hr. Connellsville foundry at $4.15, 48-hr. furnace at $3.15 and stock at $2.75.

BALTIMORE

New Year Gives Better Promise for Coal Trade—Bunker Prices Tighter—Export Movement Increasing—Hard Coal Demand Better.

Bituminous—The coming of the New Year was very welcome to the coal trade in view of some rather bad experiences in 1921. There is no longer a doubt that general business is on the upward trend and the coal trade with it.

Port figures on general merchandise show an increasing line of export. The business of the port last year was 40 per cent greater than in average prewar years. The close of December brought a renewal of export movement. Five vessels were loaded between Dec. 17 and 29.

Bunker prices reflect a better port movement. The best coals at Tide which sold two weeks ago on a gross-ton basis at piers as low as $4.50 are now worth $5.10@$5.20. Line business is not strong, although there is some sign of strengthening. Best steam coals are held $2.25@$2.40 a net ton f.o.b. mines. Some good steam coals are still on the market here at $2@$2.10. Best gas lump is holding at $2.25@$2.40, with mine run from Pennsylvania sources at about $2. West Virginia gas lump is still obtainable around $1.85 and mine run at $1.50 in many cases.

Anthracite—Hard coal dealers report that snappier weather has brought better demand. This is being evidenced in from one to three ton orders for the most part. There is plenty of coal running and a fair stock in yard.

PHILADELPHIA

Anthacite Buying Light — Shippers Curtail Working Time—Retailers Hold Back Orders—Steam Sizes Quiet—Bituminous Inquiries Increase—Better Buying Looked For.

Anthracite—Retail buying has been moderate, although the weather has been cold enough to call for heavy consumption of fuel. The dealers have put out some coal, in fact more than they have taken in, as they seem to have grown ultra-conservative in this respect.

Operators are experiencing more difficulties than for years. The lack of ordering has caused them to lose time at the collieries. Most of them took quite a few extra days in addition to the regular holidays, and unless there is some continued cold weather further vacations are in order.

Independents have not cut prices recently, as with the shorter working time they have been able to dispose of their surplus. Nevertheless there is some uneasiness over the price situation.

Some of the local retailers have received forms from Secretary Hoover asking information as to stock on hand. Of course replies are purely voluntary, and the report is that the authorities are gathering information as to coal above ground in view of possible trouble at the mines in the spring.

Steam coals remain quiet, as the reduced working time has cut down output. Buckwheat can be had on the spot market at $3, rice $2, with barley $1.25@$1.50.

Bituminous—The end of the year has probably been productive of the lightest tonnage of the entire season. Large consumers have bought lightly in order that their inventories for the year would be low. Production has been light but even now there seems to be some slight trend toward betterment.

Shippers have received quite a lot of inquiries for prices. This indicates that the consumer wants to be ready to take in some coal soon.

Prices at times are inclined to sag a trifle, with some good coals offered below the market average when taken in small blocks, but on the whole the average as reported in current quotations this week is a fair index of the spot market.

Railroads show no inclination to increase their purchases, evidently being content to take coal as needed, without adding to the light stocks already on hand. The Tide situation does not improve, and remains almost in a state of lethargy.

Among the more prominent shippers there is a pronounced tendency to do away entirely with the practice of quoting prices on the pool number system. Producers of the highest grade fuels are now selling them by name. In time it is felt that the custom will grow and that to quote a pool number will likely raise the suspicion of a possible inferiority.

Northwest

DULUTH

Prices Break so as to Unload Docks of Bituminous—Anthracite Firm—No Industrial Improvement Is Noticeable.

A break in prices has again occurred at the Head-of-the-Lakes, with bituminous down $1 all around. This is due to the lack of buying which failed to hold up to expectations. Cold weather has not brought expected results and dock men are lowering the bars so that they will not be caught with excess stocks.

Anthracite has not followed bituminous on the toboggan and is holding firm at former levels, with the exception of buckwheat which is showing signs of weakening. No break in anthracite is anticipated.

Prices are $6 a ton for Hocking, Fairmont and Youghiogheny lump, $5.25 for run of pile. Screenings are firm at $4. Hazard has dropped to $6 from a list of $7. Pocahontas, lump and egg, is at $9 from a former price of $10. Smithing is being sold in bulk at $8.

A comparison of prices with the peak in October, 1920, is interesting. At that time Youghiogheny, Hocking, and Fairmont lump were selling at $14, with a price of $12.50 on run of pile. In April of 1921 the price came to $11.75 and $7.50, and in May lump dropped to $7 and held.

No industrial improvement has been felt in the Northwest during the month and it seems probable that the large consumers at the head of the Lakes will not get their plants started until well after the middle or last of January. Shipments have been increasing, however, on the basis of the reduction in prices.

Railroads are taking more coal now and are filling their coal depots against a possible shortage when transportation gets tied up. The cold weather also makes it imperative that the railroads use more coal in fueling.

Dealers in anthracite are buying in one carload lots only and are evidently holding down their orders in the hope that lower freight rates on coal will go into effect following the first of the year.

MILWAUKEE

Old Year Closes with Cold Snap—Lively Demand for Coal—Prices Held Firm—Cutting Reported in Screenings.

The last week of the old year brought a spurt to the coal market, due to a spell of near zero weather. Local deliveries and rail shipments were correspondingly stimulated. The demand from householders runs largely to the domestic grades of soft coal, with anthracite a close second. Coke is in little demand.

The price schedule on both anthracite and soft coal is maintained as a rule, but dealers report that screenings are being marketed in some cases at a cut in price. To what extent this practice is carried on is hard to discover. The dock companies here hold the whip hand when it comes to controlling prices, and the "thousand and one" small dealers who have no yards but who do business on a commission basis must stick to the schedule or go without coal; hence price shading calls for the strictest caution.

The market from now on through the winter in both city and country will be influenced largely by weather conditions. A strong and prolonged cold wave is bound to cause much discomfort in the city as the stocks carried by consumers this winter are so small that deliveries will be unable to keep pace with the rush of orders that a cold wave will bring.

MINNEAPOLIS

Cold Snap May Stimulate Market Soon—Drops in Prices Expected to Rouse Business—Consumers Fear no Shortage.

A little of the old-fashioned winter prevailed here lately, with two days of cold weather. If this continues it will undoubtedly have some real effect upon the coal market. But until it registers with increased orders from the retail trade generally, it will merely augment consumption.

Business has been so slack in Eastern soft coal, that reductions in the retail price of Youghiogheny and Hocking of $1 a ton have been announced. Youghiogheny and Hocking are selling $10.75 @$11 and Pocahontas $13.95@$14.35.

People in the trade have been watching for severe weather, believing that it would certainly bring about a rush of business. They based the expectation upon the fact that no one was carrying any heavy stock, and the first suggestion of severe weather would mean a quick running down of the supply and an early need for more. But buying is too much inclined to hold back, to reverse itself until lack of coal compels it. Probably many retailers would have preferred to let their last of December orders wait until into

January, as would consumers wish to get their purchases on February statements rather than January. But there has not been a generally increased buying so far.

People are not at all alarmed as to any risk being run in waiting until the last minute before getting a new supply. There is an ample store of coal on the docks for all probable needs, and there is no difficulty with the railroads moving freight without delay. The cold days resulted in delays to train movement, but there were no trains tied up in snow drifts, as happened twenty and thirty years ago.

The trade sees in the cold waves that prevailed lately, a chance for moving a better tonnage than has been possible heretofore, and hopes for a chance to recoup against some of the offsets of the past two or three months. The general tendency is against much activity, but even that tendency cannot withstand the effects of continued severe weather.

Domestic trade is being cut down by the use of wood and other substitutes, including crude oil burning devices. The latter are marketed freely. How successful they are, remains to be seen. They give a very alluring initial demonstration. People are certainly installing them for cooking and also for operating heating plants. Just as far as they are put in, they cut down the outlet for coal.

Inland West

CHICAGO

Market Duller Than Usual—City Full of Coal Salesmen Drawn Off the Road —Steam Demand May Pick Up Soon.

Christmas week made the market even duller than ordinary. A great many sales agents, representing both wholesalers and operating companies, have left town over the holidays, while some have packed their belongings and gone South for a longer stay.

Practically all of the big companies having headquarters in Chicago have called their salesmen in from the road, and have turned them loose to call on the city trade. So the average coal buyer, whether he burns steam coal or is a retailer, is having a good run for his money.

Even though the retail trade has been stimulated slightly during the past week this stimulation has not as yet been felt by the producer or wholesaler because the retailers and steam buyers have had such large quantities of coal on hand that they have not been forced in the market to buy. It will take another two or three weeks of very coal weather before much can be looked for, either from the steam user or the retailer.

The steam market continues to improve. It is safe to say that screenings from the best fields in either Illinois or Indiana will soon bring in excess of $2 per ton. In fact, the average price today on current sales is about that. The Chicago steam coal market is in a state of excitement because it has been rumored that some of the railroads are going to start buying in anticipation of strikes.

The market on Eastern coals is very inactive. Anthracite is only moving forward in small quantities. The old line companies are holding their prices fairly firm, but the independents have made some substantial cuts. No sales stimulation, however, has resulted. There is practically no market at all in Chicago for West Virginia splint or Kentucky block, while the sales made during the last few days on Pocahontas and smokeless coals have all been forced, as the dealer is only buying when sorely tempted by an attractive price.

DETROIT

Buying of Steam and Domestic Bituminous Continues Light—Shipments Are Small and Chiefly from Unorganized Mine Districts.

Bituminous—Very little coal is being sold in Detroit, either steam or domestic. Business in the closing week of 1921 is as torpid as it was earlier in the year. Wholesalers and jobbers are finding it extremely difficult to interest customers.

The situation runs parallel with that in general business. Manufacturing and industrial plants are, in most instances, running on very low schedules with a much smaller consumption of coal than normal.

The movement into Detroit is light. The greater proportion of the shipments are said to be coming from the unorganized mining districts of West Virginia. Producers in the unionized mine areas are closing down or curtailing, because of their inability to meet the competition of the unorganized mines.

Despite the cold of the week, the demand from domestic consumers has not awakened.

Four inch lump from West Virginia is quoted at $3, two-inch lump $2.50, egg $2.25, mine run $1.75, slack $1.25. Three-inch lump from Ohio is offered at $3, egg $2.25, mine run $2, slack $1.50. Pittsburgh No. 8, 1¼-in. size, is $2.35, three-quarter lump at $2.25, mine run $2, slack $1.75. Smokeless lump and egg is holding around $3.50, mine run $2.25, slack $1.25.

Anthracite—Most of the retail yards are well supplied but the volume of buying is disappointingly small. This is attributed in part to the high cost of the prepared sizes.

ST. LOUIS

Market Unusually Quiet, with a Little Demand for Cheapest Grades — Steam Fairly Active—Shippers Cut Prices.

The St. Louis situation shows some little improvement in demand for screenings for steam. Nothing indicates any similar activity in the country sections, except that a fairly good tonnage is moving to Chicago.

There is some activity in retail circles on Standard lump, which is the cheapest grade sold, but most of the orders are small. Mt. Olive business and Carterville are unusually slow.

Dealers' yards are loaded with Mt. Olive and Carterville coal and some of them fear they are not going to move it this winter.

The movement of anthracite, coke, and smokeless is unusually slow. This trade is expected to pick up soon.

Business that has been moving in the past to Omaha has slowed up and reports from Kansas City show a glutted market which bars shipments from St. Louis.

Retail prices range from $7.50@$7.75 for Carterville; $6.50@$6.75 for Mt. Olive and $5.50@$5.75 for Standard.

COLUMBUS

Snappy Weather Wakens Domestic Demand — Retail Prices Grow More Stable—Buying Is Frequent but Small.

A slight increase in domestic demand has developed from lower temperatures. Steam grades are still quiet with the exception of screenings which show considerable strength. Production continues low.

Lower temperatures have stimulated the domestic market to a certain extent, but not enough to cause any great movement. Retailers are buying more freely, but are inclined to clean up before doing much ordering. Retail prices have become more stable, although there is no decided upward movement. Hocking lump is selling around $5.75@$6.25 and West Virginia splints, $6.75@$7.50, depending upon preparation. Pocahontas lump is selling around $9, while anthracite is quoted $14.50@$15.

Consumers are buying more freely but orders are generally small. Dealers have been making deliveries promptly as orders have not accumulated much.

Steam trade is still quiet, outside of screenings which are quoted $1.25@$1.50. This is caused by the marked reduction in lump production, making screenings scarce. Many large steam users which have their power plants equipped with crushers are buying mine run for crushing. Public utilities are still the steadying effect on the steam trade. Railroad requisitions are not large. Most of the hospitals, schools, and public institutions have been supplied. Little improvement in the steam trade is expected during the coming month or six weeks.

Production is still low and no improvement is expected until steam consumers resume operations to a large degree. Many manufacturers suspended during the holiday week. In the Hocking Valley the output is about 15 to 18 per cent of normal.

CLEVELAND

Labor Developments Dominate Market Outlook—Buying Still Narrow—Business Upturn Expected.

The coal trade in this district is centering its attention upon the labor developments and the probable market consequences. In many quarters it has been felt for some time that a strike was inevitable and the recent action of operators in the southern Ohio and the Pennsylvania regions in breaking off relations with the unions has caused the feeling that breakers are ahead.

As a result the trade sees clearly an upturn in demand for fuel beginning probably next month. If industrial activities pull out of the lull the outlook for higher prices, at least temporarily, is good. Many operators will welcome such an advance as it would give them the first chance they have had in months to recoup the losses they have been suffering.

Industrial leaders welcome the coming showdown on mine wages holding that the present prices for coal are due to unadjusted wages. Once this matter is settled and coal prices are on a stable basis, forward buying of coal is expected to begin. In the meantime buying is still hand-to-mouth and no spurt is expected soon. The colder weather has helped the retail trade to some extent.

Receipts of bituminous coal for the

week ended Dec. 24, for industrial concerns and retailers, show a significant increase over figures of the preceding week. The total was 1,112 cars, 820 of these for industries and 292 for retail dealers, as against a total of 930 cars the previous week.

CINCINNATI

Holiday Season Brings Some Encouragement—Spot Prices on Slack Rise Slightly—Southeastern Kentucky and Nearby West Virginia Mines Work Haphazardly.

The holiday season, usually a bugbear brought a little ray of sunshine in the coal business here. Enough coal is moving to keep the market on edge and only enough slack is coming through the gateways to make the buyer who was not prepared for a fore-shortening of the domestic production pay an increased spot market price.

Smokeless is a little firmer though the top, $3.50 for lump and egg, is a bit hard to get. Much of the accumulation at the distributing yards of the Norfolk and Western has disappeared. Local demand is still indifferent. Mine run is in supply sufficient to meet the ordinary calls.

Bituminous offerings have been large enough to care for the spot buyer, though the price of screenings went up to $1.35 with $1.50 asked by some firms. Southeastern Kentucky mines are still working haphazardly, the largest producers turning out the smallest tonnage known in years. Logan County and Kanawha district in West Virginia also have small tonnage. Lump and block is still going begging. Mine prices are shown in the Weekly Review.

Retail business, locally, moves slowly. Some retailers are making lower prices, though the bulk of them are still trailing with the values set Dec. 1. Smokeless lump brings $8.75@$9, mine run $6.75@$7.25, slack $6. Bituminous lump is $7@$7.25, mine run $6@$6.25 and screenings $4@$5.

West

DENVER

Production About Equal To Last June's—Total To Dec. 1 is 2,776,000 Tons Behind 1920—Wages Going Down.

Weekly tonnage at the end of December dropped to that of June, or about 125,000 tons. Only within the last two weeks in the closing month of the year has cold weather prevailed. Production to Dec. 1, 1921, amounted to 8 483,466 tons as compared with 11,260,407 tons during the corresponding time in 1920, a decrease of 2,776,941 tons.

Resumption of operations in the Pueblo steel mills will help to bolster up mine operations to a certain extent. There is no change in prices, at the mine or in retail markets, where bituminous is selling for $1 less than a year ago. Lignite is also a little under last year's price.

Reduced wages is the price paid by Gunnison County miners, in the semi-anthracite field, for a sympathetic strike in protest against the Colorado Fuel & Iron Co.'s wage cut in the southern bituminous fields.

The 33 per cent cut in wages applied only to certain bituminous mines. Officials in the Gunnison County district declare that when the mines reopen wages will be reduced there.

SALT LAKE CITY

Business Again Lags—Cold Weather Needed—Traffic Movement Slows.

Dealers are marking time once more and things are correspondingly quiet in operating circles.

The president of the local retailers' association states that he believes Salt Lake City consumers have not more than 25,000 tons of coal in their bins and he estimated the amount in the yards as about 75,000 tons. The coal traffic over Soldier Summit has dropped to only 100 cars a day.

South

LOUISVILLE

Retailers Cut Prices to Meet Competition From Snowbirds—Prices Are Going Down—New Business Expected Early This Year.

Louisville retailers in meeting competition of snowbirds in some instances have cut retail prices a dollar a ton. They are rather disgusted with the general situation.

Snowbirds in Louisville have been steadily cutting the price until some eastern Kentucky lump is selling at $6.75, as against $8 a month ago. Some of the larger retailers have just announced reductions to $7 on this grade, while some western Kentucky lump is selling at around $5.75@$6.

Some of the large retailers with 10,000 to 20,000 tons of coal in their yards that cost as much as 50c. to $1 a ton over present levels at the mines, are considerably worried, especially as there is prospect of lower prices at mines, and the probability of reduction in freight rates shortly after the first of the year. Retailers must unload or carry over stocks until next summer. Severe weather might help clear up the situation.

Jobbers in some instances expect more business now, as it is believed that industrial stocks have been allowed to run very low until after inventory.

One jobber-operator remarked that railroads are taking only 50 per cent of minimum contract requirements. This indicates industrial concerns are using far less than the usual quantity of coal.

Many coal men anticipate retail prices of $5.50 to $6 on best grades of lump coal if wages and freight rates are reduced.

BIRMINGHAM

Market Still Sleeps—Holiday Depresses Demand—Domestic Grades Reduced at Mines—Steam Prices Stationary.

The trade, which has been so acutely dull here for the past two months, of course was not expected to take on any change for the better during Christmas week, and no improvement of note will likely be shown early in the new year. There is little inquiry and aggregate sales are small.

Reductions in mine prices on lump and other domestic sizes were made by a number of producers, ranging from 25c. to $1 per ton, following cuts put in a fortnight ago by retail dealers in the Birmingham district. The thermometer reached the ice-making stage several days the past week, followed by a rise in temperature and rains, and is again dropping.

Mine prices on the several grades of steam and domestic coal are as follows:

	R/M	Washed Lump and Nut
Big Seam	$1.90@2.30	$2.00@2.30 $2.75@4.00
Carbon Hill	1.90@2.25	2.50@2.85 4.00@4.25
Cahaba	2.25@2.75	2.50@3.15 4.50@5.50
Black Creek	2.50@2.75	2.50@3.00 4.50@5.00
Corona	2.25@2.50	2.75@3.00 4.00@5.00
Pratt	2.25@2.50	

Production for Christmas week was the lowest of the year, hardly reaching 200,000 tons. The bulk of this was produced by furnace companies for use in coke manufacture. From present indications the output for the year will be approximately 12,000,000 net tons or about 5,000,000 tons short of 1920.

Southwest

KANSAS CITY

Soft Weather Leaves Market Lifeless—Mines Working 10 or 15 Per Cent Full—Prices Firm.

The temperature went down to nine degrees above zero this week, but like the market for coal, it did not stay put and is now unseasonably warm and demand fell off sharply.

Strikes continue to hamper the operators in the Kansas coal field. Only about 10 to 15 per cent of mine capacity is being utilized and there is no market for all that is being produced. The real buying power in this section of the country is largely dependent on the prosperity of the farmers and cattle-raisers who are buying little now.

No material change in prices has taken place this past week and prices quoted, f.o.b. mines, are as follows: Kansas lump, $5; mine run, $4@$4.25; nut, $4.50; mill, $2.75; slack, $2.50; north Missouri lump, $4.25; mine run, $3.50; washed slack, $3.75; raw slack, $2.50; Arkansas lump, $7.50; mine run, $3.75@$4.25; slack, $2.50@$2.75; McAlester Oklahoma lump, $8.50; nut, $7; slack, $2.50.

Canada

TORONTO

Dealers Doing Fair Business—Large Stocks on Hand—Bituminous Market More Settled.

Conditions are practically unchanged. Business which is usually quite active at this season in only fair. The domestic demand varies with the weather and orders are mostly for small lots. Dealers have ample supplies in the yards and shipments show some falling off.

The industrial demand for bituminous continues light. Surplus supplies are being gradually disposed of and the market is becoming more settled, with less price-cutting. Quotations are as follows:

Retail:	
Anthracite egg, stove, nut and grate	$15.50
Pea	14.00
Bituminous steam	10.25@10.75
Domestic lump	12.00
Cannel	11.00
Wholesale, f.o.b. cars at destination	
¾-in. lump	7.00@ 7.75
Slack	6.00@ 6.75

News From the Coal Fields

Northern Appalachian

PITTSBURGH

District Follows Southern Ohio out of Central Competitive Field—Operators Ready to Buck National Union Officials—Wage War Brewing—Gas Slack Is Stronger.

The Pittsburgh Coal Producers' Association sent a letter to President Lewis of the United Mine Workers on Dec. 28 stating briefly that they saw "nothing beneficial to the public or the coal industry" in the meeting proposed by Mr. Lewis to arrange for a conference on a wage agreement for the central competitive field and stating that they declined to meet. The day previous, the operators of southern Ohio announced a similar decision. It may be taken as established that the operators will no longer act in a body as the central competitive field. Much evidence to prove this has come out. The great majority of the operators are opposed to continuance of the check-off and thus there are two great issues joined apart from the general subject of wage rates and working conditions.

A fair guess is that, the central competitive field having gone to pieces, the operators of the Pittsburgh, Freeport, Butler-Mercer and central Pennsylvania districts will act in harmony in the matter of wage scale negotiations, and will be prepared to negotiate with the district organizations of the United Mine Workers rather than with the national body. No one in the trade appears to doubt that the U. M. W. will endeavor to bring about a general suspension at all mines in the country it has controlled, to preserve the check-off and the method of collective bargaining hitherto observed.

The market continues very dull. The only change was an additional improvement in slack prices, particularly on gas. Slack has been a drug on the market, being produced of necessity in filling orders for screened coal and has in essense been sold to the highest bidder. Mine run and screened prices remain practically nominal asking prices, while in Panhandle lump there is, as usual, an actual trading market. Operations are perhaps lighter than two or three weeks ago.

EASTERN OHIO

Production Starts Upgrade, but Only to Replenish Stocks—Railroads Take Bigger Proportion—Strike May Start April 1.

The closing days of the year find industrial activities somewhat diminished, but the volume of mining in the eastern Ohio field for week ended the 24th gained slightly. Total output was 280,000 tons or 45 per cent of potential capacity—5,000 tons above last week.

Operators say, however, that this was only the result of an effort to close the week with some unbilled coal on track in anticipation of orders over the week-end double holiday.

Those prominent in the trade state that inquiries from both industries and retailers have been negligible, and there is some holding off on orders for immediate shipment because of elimination of war tax on freight charges effective Jan. 1.

It is also asserted that at the present rate of production between 40 and 50 per cent of output is going to the railroads for fuel, as contrasted with the normal proportion of 30 per cent.

With the New Year at hand the trade hopes for a demand, particularly from industry. The consensus of opinion seems to be that the reserve stocks of fuel which were put in during late October and early November are now about gone. The steel industry and other manufacturers may resume larger operations thus creating a more active demand for fuel.

Labor troubles at the mines threaten. The refusal of operators of the southern Ohio (Hocking) field to discuss a new wage agreement with national officers of the United Mine Workers may precipitate a strike.

Owing to the smaller quantities of slack available during the past few weeks, due to slump in production of prepared sizes, the price on spot slack has experienced a further stiffening to $1.80 per ton. Spot prices on other grades remain about the same as previously quoted.

UPPER POTOMAC

Usual Holiday Idleness — Lowered Wages No Factor—Few Resumptions Until New Years.

There was the usual suspension of shipments to contract customers over the holiday period. There was no spot demand, even those mines where wages had been adjusted downward being unable to operate. It was becoming apparent that the market could not absorb any additional tonnage even with the low prices which were being made, and operations generally were closed down until after Jan. 1.

UNIONTOWN

Furnace Coke Contracts Get Keen Attention—Quotations Range From $3.25 to $3.75—Spot Market Sluggish.

Negotiations for furnace coke contracts continue to hold first attention. The closing of contracts is more significant this year because inquiring consumers will decide between beehive and byproduct coke. There are only about five furnace interests looking toward 1922 fuel requirements.

At the present time there is a wide range of quotations for furnace coke contracts from $3.25@$3.75. Some operators hold that most inquiries have been met with the minimum figure. Nothing has come to light about the price views of byproduct producers for furnace contracts.

Meantime the spot market is sluggish. Sales are being made in carload lots at $3 and even $2.75 is seen where quick disposal is necessary. Foundries are taking inventories and are not heavy buyers. A few sales are recorded at $3.75@$4.

The coal market is also inactive. Steam is quoted at $1.25@$1.40 with byproduct at $1.60@$1.75.

CONNELLSVILLE

Additional First-Quarter Contracts Closed—Byproduct in Keen Competition—Spot Market Quiet.

Last week two contracts for first-quarter furnace coke, the first of the season, were reported, at $3.25 and $3.40 respectively. Two additional contracts have since gone through, at $3.25 and $3.50. The price range presumably represents differences in quality. The contracting is entirely by furnaces having contracts expiring Dec. 31, but there is inquiry out against one furnace not now in blast, the Trumbull-Cliffs stack at Warren, Ohio, which may go in Jan. 15.

The spot market continues without any demand from furnaces, and a subnormal demand from the miscellaneous buyers. Coke prices are softer because of no demand. We quote: Spot furnace, $2.75@$3; contract furnace, $3.25 @$3.50; spot foundry, $3.75@$4.50.

FAIRMONT AND PANHANDLE

Holiday Idleness Prevails — Sluggish Markets Continue—Slack Coal Only in Demand.

FAIRMONT

Christmas week was marked with the usual holiday idleness which was accentuated by poor market conditions. There was no spot buying and contract orders were either curtailed or suspended until the new year. Prices had gone to pieces, with the exception of slack which was firmer, owing to the growing scarcity.

NORTHERN PANHANDLE

Production was being maintained by railroad fuel loadings alone, which were greatly diminished as the traffic grew lighter. Commercial mines were not operating more than 25 per cent of capacity and spot demand was absolutely at a standstill. The bulk of the output went to Northern and Western markets.

ANTHRACITE

Cold Weather May Revive Demand—Holiday Sluggishness Prevails — Independents Hard Hit.

There is an indication of improvement in the coal market and some mines have commenced operations. The strike of eight of the Lehigh Valley Coal Co.'s mines has not yet been settled. The mines of the Glen Alden Coal Co. have been closed all week.

The few independents who are operating are not working more than a couple of days a week. Besides the general slackness due to the lack of demand the holidays affected the output.

CENTRAL PENNSYLVANIA

Year Closes with Extreme Dullness—Wage Reductions Vitally Necessary.

With an output that falls millions of tons behind the year 1920, the week just past rings down the curtain on one of the worst years in the history of the business. However, operators are looking forward with renewed hope

and feel certain that one thing or another will set the machinery in motion again which will make 1922 a more prosperous year.

When the big decline took place in 1920, it kept on the toboggan and the first of 1921 found prices around $3. Quotations in January for Pool 1 were $4; Pool 9, $3.20; Pool 71, $3.30; Pool 10, $2.75; Pool 11, $2.40. These gradually declined until in the last week of the year, on the same grades of coal, the following prices were quoted: Pool 1, $2.85; Pool 9, $2.20; Pool 71, $2.25; Pool 10, $1.95; Pool 11, $1.65.

It is said that many operators are contemplating closing their mines and going back to the 1917 scale, while in some instances this has been carried out. The wage scale is to be fixed the latter part of March. It all remains to be seen whether the union and the non-union workers can get together during the year.

A few hundred men are on strike at present in Somerset County, owing to operators going back to the 1917 scale. Many mines find the going very difficult and are closed down. It is believed, however, with the transportation tax off and the supply on hand exhausted, there will be a short period of buying during January.

Middle West

SOUTHERN ILLINOIS

Domestic Condition Unusually Bad — Screenings Fairly Active — Colder Weather Needed — Holiday Idleness Cuts Production.

Instead of showing up better as colder weather advanced the Carterville field has developed into a most unfavorable situation. With the abolishing of the war tax on freight at the end of the year there is an inclination to hold off ordering. Buyers are not desirous of carrying heavy stocks over the inventory period because there is nothing to indicate that prices will be anything above what they are at the present time unless unusually cold weather sets in.

Were it not for the fact that railroads are taking some coal during the lull in order to keep their traffic up the condition would be a most precarious one. The scattered shipments of domestic go to all markets with no particular movement in any one direction. Mines are loaded with these sizes.

Somewhat similar conditions obtain in the Duquoin and Jackson County fields. Prices are on a par with those of the independents in the Carterville district. The Mt. Olive situation has apparently grown worse. Mines get one and two days a week. The St. Louis price on domestic is $3 and in the country, $3.75, with practically no country coal moving. No steam coal is available from this field on account of the poor working time and the fact that the small tonnage mined is covered by contracts, but screenings would sell at $1.75@ $2 if they were available.

The Standard district is in bad shape on prices. Mines get from one to three days a week, depending upon their railroad contracts and their ability to move lump.

There is considerable dissatisfaction throughout all Illinois fields on the part of the miners and in several places single miners have been leaving for those of the non-union West Viriginia fields where full time work is reported.

WESTERN KENTUCKY

Southern Demand a Shade Better— Screenings Bring Good Prices—Retail Trade Inactive.

While there has been some little improvement the past few weeks in Southern movement, the general demand is poor, and retailers in the large markets are not buying any appreciable quantities of coal.

Screenings have been scarce and therefore high in price, with the market quoted right around the mine run low level. Screenings have been temporarily lower the past few days as a result of some large consumers having stopped shipments.

Some of the operators are of the opinion that there will be better industrial demand and heavier stocking shortly after the first of the year, but prospects for retail business are poor. Most retailers have a good deal of stock on hand and are not in a buying humor.

MIDWEST REVIEW

Market Remains Dormant in Spite of Ten Cold Days—Dock Cuts Affect All-Rail Business—Many Mines Closing.

The holiday season brought a period of inactivity in the coal market. Ten cold days failed to stimulate the domestic coal market.

Illinois and Indiana operators are encountering very stiff competition in the Northwest and from the docks at the Head-of-the-Lakes. Prices were reduced Jan. 1, f.o.b. docks, to such low levels that now it is possible to buy Eastern coal almost as cheap as southern Illinois or Indiana coal. This, of course, is going to make a tremendous difference to our operators who, up to now, have been enjoying a fair business in the Northwest.

It is believed that shortly after the first of the year an improvement will take place in the domestic demand. Freight rates on grains are reduced, and this will influence a large movement of grain to central markets. Farmers will thus be able to liquidate and, consequently, will be in more of a buying mood.

The industrial situation in the Middle West continues to be unsatisfactory. There was some activity during October and November and the early part of December, but those plants which opened up on a large scale have found that their plans were a little premature and, consequently, have curtailed their activities. The cement plants are buying coal, although their plants are not running. They are planning on accumulating a little surplus so they will be able to operate after April 1, even if a strike materializes. Unemployment remains about the same, or at best, shows little improvement.

The labor situation at the mines continues on an even course, with the men showing an inclination to work when opportunity for work occurs. One or two strikes of small importance occurred, perhaps the biggest one in Indiana, where a number of men went out because they claimed a pump-man had been discharged without sufficient reason. Down in southern Illinois a number of mines have been closed. Practically the entire staffs at these mines have been let go. In one of the biggest mines in the field which is down, only four men are left—two above ground and two below.

Reports of this nature will become more common, as operators have given up a useless battle against circumstances and have now decided, in some cases, to accept the policy of watchful waiting. When they close their mines they are at least protected against depreciating their property and selling their product at a loss.

Middle Appalachian

HIGH-VOLATILE FIELDS

Spot Market Inactive—Holidays Bring Suspension of Orders — Production Heavily Curtailed — Only Screenings in Demand.

KANAWHA

The general holiday suspension plus the lack of demand caused production to slump during Christmas week. Industries did not find it so easy to secure nut and slack but during the holiday season there was a lessened demand for that grade. Because of the growing scarcity of slack mine run had slightly improved its unsatisfactory position.

LOGAN AND THACKER

Hold-orders and cancellations were general during the week, making it apparent that the last ten days of December would be the dullest period of the year. Production was not over 40 per cent of capacity, most of the output going to Western markets. Domestic and mine run were draggy but slack was harder to obtain because of the growing scarcity.

Kenova-Thacker operators managed to keep production up to 70,000 tons, but a growing number of suspensions made it certain that the last week of the month would be a sluggish one.

NORTHEASTERN KENTUCKY

As in other fields, there was a general suspension of operations over the holidays. Contract business was curtailed and the spot demand was completely stagnant. It was impossible to move mine run or domestic sizes and the sale of screenings was limited by the low production.

VIRGINIA

Producers managed to keep up a 50 per cent output. Nearly all of this, however, was on contract, although there was a growing inquiry for spot slack. Mines not having contract business remained idle.

LOW-VOLATILE FIELDS

Hampton Roads Tonnage Reduced — Production Affected by Holidays—Sluggish Demand—Many Mines Closed.

NEW RIVER AND THE GULF

The operation of some New River mines on a non-union basis increased production but as the holidays approached there was a curtailment of work-time in response to many contract suspensions. Apathy prevailed in the spot market although slack was holding its own because of the growing scarcity.

Gulf production continued to decline, not being over 35 per cent of capacity. With the clearance of coal at the Hampton Roads piers the first of the year gave promise of a better move-

ment of coal in that direction. Shipments to New England were going along fairly well but export business was entirely flat.

POCAHONTAS AND TUG RIVER

Pocahontas production was not more than 200,000 tons with "no markets" amounting to nearly 300,000 tons. The output was cut not only because of poor demand but because of the usual holiday lull. A small tonnage was flowing to Tide for New England but the bulk of the movement was to the West. The majority of the operations remained closed from Christmas to New Years.

Tug River production was lower than usual owing to the slackening of industrial activity. There was little spot demand even at lowered prices. What kept up production were the large consignments to Western steel companies as there was no Eastern movement worth mentioning. Prepared demand had broken to a very material extent.

Southern Appalachian

SOUTHEASTERN KENTUCKY

Miners Return to 1917 Scale—Some Resumption Anticipated—Market Unable to Absorb Much Additional Output.

Miners having accepted the wage scale of 1917, most of the operators announced their intention of starting up on Jan. 2 and some say they have business in sight that will guarantee a steady run for at least the first half of the month. Wholesalers, however, are not very optimistic. It is known that a great many users of steam have been working on their stocks during December in order to have them as low as possible for inventory and this should result in a better movement for January.

Domestic yards in the South are well stocked, mostly with coal costing from 50c. to $1 above current quotations and they, too, are working off stocks.

The 1917 scale of wages will enable southeastern Kentucky better to compete with West Virginia coals going North and East Tennessee and southwestern Virginia in the South.

News Items From Field and Trade

ALABAMA

The interests which organized the Great Southern Steel Co. in Dover, Del., recently, are reported to be the same as the promoters of the **Alabama Land Syndicate, White Iron & Coal Co., Palatina Mining & Development Co.**, and one or two other corporations which bought up large acreages of coal and iron ore lands in Etowah, DeKalb, Marshall, St. Clair and Cherokee counties a few months ago. The properties which it is supposed will pass to the control of the new organization comprise about 101,000 acres acquired by Chicago capitalists and others, and 45,000 acres, which it is reported was purchased by Henry Ford. These lands are only about sixty miles from Muscle Shoals properties, which Ford is negotiating to obtain from the government. Charles E. Pain is reported to be counsel for the corporation and Robert W. Hunt, Chicago engineer inspected the properties and made a report on the extent of the mineral content.

COLORADO

Six men were killed by firedamp in the Satanic Mine of the **Colorado Collieries Co.**, near Morrison, when they attempted to place a bulkhead on the level of an abandoned shaft, used as an air course, to stop a fire which had been spreading for several days. James W. Graham, deputy state coal mine inspector, and a rescue crew from the Leyden Mine, in charge of Archie Gilchrist sought to revive the miners, but without avail.

ILLINOIS

The J. K. Dering Coal Co. has increased its capital stock from $200,000 to $3,000,000.

William D. Elstrom, former president of the Chicago Coal Merchants' Association, suffered the misfortune of a broken leg through a fall on the ice. His injuries, while painful, are not serious.

Recent visitors in the Chicago market included the following: **C. M. Wasson,** president of the Wasson Coal Co., Harrisburg; **James Forrester,** president of the Paradise Coal Co., Duquoin; **J. A. Templeton,** of the Templeton Coal Co., Glendora, Ind.; **Enoch Carver, Jr.,** vice-president and sales manager of the Cosgrove Coal Co., Johnstown, Pa.; **W. J. Spencer,** president of the Monmouth Coal Co., Brereton; **O. G. Scott,** secretary of the Central Illinois Coal Bureau, Springfield.

Advice from the **Consolidated Coal Co.** of St. Louis, which owns Mine 9, is to the effect that the mine property will be a total loss. Backwater from the Big Muddy River broke into the mine and within three hours filled the entire mine for a radius of more than a mile. Miners had not been working in the shaft for two weeks fearing such a danger. In years past when the river was high and backed up in low places over the mine, work was suspended.

Announcement has been made by A. F. DelValley & Sons, of Danville, that they will soon start sinking a new mine at that place. The firm, which has been operating in that vicinity for several years, has recently filed articles of incorporation under the name of **DelValley Coal Corporation,** capital stock $100,000, of which Alphonse DelValley, A. J. DelValley and A. L. DelValley hold $33,333 each. The new mine will be put in operation early in the year.

A deal was recently consummated whereby the **Perry County Coal Corporation** became the owner of 200 acres of undeveloped coal lands in Lebanon and O'Fallon townships, St. Clair County. New mines will be sunk in these two townships as the Illinois Terminal Railroad of East St. Louis has announced that it will extend its East St. Louis-Alton line into O'Fallon, giving the operators in the northern part of the county an opportunity of shipping coal direct to Chicago.

An action which has attracted attention in mining circles is that of the **Sangamon County Mining Co.**, operating at Lincoln, when it announced that a carload of coal would be given to each church in the city.

INDIANA

Norman S. Tighe, manager for the N. S. Tighe Coal Co., Fort Wayne, was placed under arrest recently on an indictment returned by the grand jury in which he is charged with having embezzled funds of the company in the amount of $238.

One of the largest operations ever opened in the state will start production of coal in the near future. **The Vulcan Coal Co.,** Evansville, has arranged for immediate installation of machinery. The company owns 1,205 acres of stripping land in Monroe Township, Pike County, about seven miles east of Oakland City. The board of directors consists of Aloys Herrdink, W. O. Sanders, D. C. Stephenson and J. J. Morris. The company is capitalized for $1,000,000.

Reassessment of coal properties in Vermillion County follow: The Ferguson-Spear Coal Co. and the Ferguson Coal Co., Clinton reduced from $183,895 to $108,280; Indiana & Illinois Coal Corporation, Clinton, total increased from $293,555 to $400,000; Clinton Coal Co., Clinton City, personal reduced from $69,055 to $1,555, and personal in Clinton Township increased from $164,655 to $258,255; Jackson Hill Coke & Coal Co., Terre Haute, personal increased from $42,870 to $115,755; Inter-State Coal Co., Terre Haute, Clinton Township, personal increased from $30,900 to $44,420; Tighe Coal Co., Terre Haute, Clinton Township, total increased from $53,945 to $110,790; West Clinton Coal Co., Terre Haute, Clinton Township, total increased from $71,310 to $84,000.

Reassessment of coal properties in Knox County include Columbia Coal Co., Bicknell, personal increased from $78,620 to $85,000; Ridge Coal & Mining Co., increased from $46,450 to $134,530; Oliphant-Johnson Coal Co., Vincennes, Washington Township, personal increased from $94,365 to $295,280; Vincennes, personal increased from $1,000 to $10,790.

Changes of assessments in Owen County include: Rowland-Powers Consolidated Collieries Co., Terre Haute, Marion Township, personal increased from $25,000 to $28,625, and Stewart Coal Co., Patricksburg, increased from $100,230 to $105,255. Parke County assessments were not changed.

The Spencer Coal Co., Sullivan, has filed a final certificate of dissolution.

KENTUCKY

In an opinion handed down recently, the Court of Appeals affirmed the action of the Kenton Circuit Court in issuing mandatory instructions for acquittal of the **Hatfield Coal Co.** of Covington of charges of conspiring to fix and control prices in Covington.

Howard Holtzlaw, auditor of the Colcord Coal Co., of Charleston was at Sanford, during the early part of December, having been called there to attend the funeral of a relative.

J. P. Kelly has sold the **Kelly Coal Co.,** Hickman, to Steve Stahr, of Hickman, who will operate the business as the **Stahr Coal Co.**

An increase of $350,000 in the capital stock of the **North Jellico Coal Co.** has been determined upon by W. S. Speed, president and director of the company, and F. M. Sackett, a director, who hold more than two thirds of the corporations stock.

Stockholders of the **Ashland Iron & Mining Co.,** voted unanimously to accept the proposition of the **American Rolling Mill Co.,** Middletown, Ohio, to buy the entire holdings of the mining company, including the **Ashland Coal & Iron R.R.** and the acreage of coal land along its line. The deal involves approximately $13,000,000 and is the largest ever closed in eastern Kentucky.

NEW YORK

Harvey B. Prescott is calling on the Northern New Jersey coal consumers for Pilling & Co., New York City. Until recently, Mr. Prescott had charge of the Pittsburgh office of W. J. Rainey.

M. L. Taylor, vice president of the Morgantown & Wheeling Coal Co. was in New York early last month on business.

Edward T. Bedford, President of the Corn Products Refining Co., has been elected a member of the board of directors of Pattison & Bowns, Inc., of New York City, to fill the vacancy caused by the resignation of **Merwin W. Bricker.** The board of directors has placed its preferred stock on a dividend basis. Two dividends were declared each at a rate of $2 per share.

C. H. Mead of the Mead-Tolliver and other smokeless companies in southern West Virginia, was in attendance at the meeting of smokeless operators early in December.

P. M. Snyder, of the New River field, was a New York visitor during the early part of December, being in attendance at the sessions of the Smokeless Coal Operators' Association.

E. E. White, president of the E. E. White Coal Co. of Glen White, W. Va., attended the meeting of smokeless operators in New York early in December.

W. Gaston Caperton, well-known in Winding Gulf coal circles, spent a few days in New York during the early part of last month.

OHIO

Several smokeless operators were in Cincinnati Christmas week, among whom were **J. J. Tierney** of the Crozier-Pocahontas Co., Philadelphia; **Harry Caperton,** New River Coal So., Charleston, and **O. M. Deyerle,** Flat Top Fuel Co., of Bluefield, W. Va.

John Glaser, sales manager of the Tribbey Coal Co., Cincinnati, has returned from a trip to the Northwest and Chicago.

George Coffey, president of the War Eagle Coal Co., of War Eagle, W. Va., has returned home after a siege in Christ's Hospital, Cincinnati, where he underwent a serious operation.

The Cleveland & Western Coal Co., owning a large tract near Powhatan, plans to spend $1,000,000 in opening the field. The program calls for a shaft and tipple in addition to 200 houses.

E. S. Helburn, of Middlesboro, Ky., who operates seven mines in southeastern Kentucky, was in Cincinnati recently consulting with the officers of the Kentucky Fuel Co., who sell his output.

Tom Morgan, sales agent for the Webb Fuel Co. is prominently mentioned as the choice of the directors for the presidency at their meeting to be held in January.

Arrangements have just been completed by the **American Mining Congress** to hold its 1922 convention in Cleveland, Oct. 9 to 15. The convention will be held in the new Exposition Hall which is being built by the City of Cleveland at a cost of $6,000,000. This will be the first national show to be held after the completion of the new edifice.

Ernest Chilson, vice-president and general manager of the Raleigh Coal & Coke Co., with headquarters at Raleigh, was a visitor at the general offices of the company in Cincinnati during the latter part of December.

Herman Everett, sales manager of the Smokeless Fuel Co., having his office at Charleston, spent a few days in Cincinnati the latter part of December.

PENNSYLVANIA

A charter has been issued to the **West Point Marion Coal Co.,** Point Marion. The capital stock is $160,000 and Myrtle M. Sterling, Dillinger, is treasurer and one of the incorporators, the others being John B. Moore, Point Marion, and Harold M. Conn, Dillinger. The purpose of the corporation is mining, producing and marketing coal.

The Mason-Heflin Coal Co. has notified the State Department at Harrisburg of an increase in its capital stock from $66,400 to $68,900, John T. Heflin, treasurer, Philadelphia.

R. W. Stone, for many years a member of the geologic staff of the United States Geological Survey, has resigned to accept a position as assistant state geologist of Pennsylvania.

The International Coal Corporation, Philadelphia, has notified the office of the Secretary of the Commonwealth of an increase in capital stock from $49,800 to $65,800. H. S. Goodwin, Philadelphia, is treasurer.

The Consolidated Coal & Coke Co., Butler, has increased its capital stock from $474,600 to $486,200; A. M. Christley, treasurer.

Recent state charters have been issued to the following coal companies: **Coal Dredging Co.,** Philadelphia; capital stock, $10,000; treasurer, J. B. Townsend, 3d, who with H. M. Blake and W. L. Fox, Philadelphia, incorporated the company. **Cairnbrook Coal Mining Co.,** Windber, $60,000; purpose, mining and preparing coal for the market; incorporators, Frank Lowery, treasurer, Windber; J. E. Reese, Scalp Level and E. M. Mack, McKeesport. **Steel City Gas Coal Co.,** Pittsburgh, $100,000; purpose, mining and producing bituminous coal; incorporators, Frank E. Weiss, Bridgeville, treasurer; F. C. Whatley, Pittsburgh, and Scott H. Braznell, Wilkinsburg.

The Combustion Engineering Corporation announces the opening of a branch office in the First National Bank Bldg., Pittsburgh. This office is in charge of W. C. Stripe, formerly manager of the Philadelphia office.

William P. Boland, a well known Scranton operator, has purchased twenty-three acres of coal land in Upper Pittston, from the Isaac Felts estate. Mr. Boland announces that he is going to sink a shaft on the west side of the main line of the Lehigh Valley tracks. Operations will start in the near future.

A. G. Smith, of Meyersdale, who is connected with the Smith Brothers Coal Co., was a visitor in Clarksburg, W. Va., early in December.

Announcement has been made by **J. Earl Myers,** well known in West Virginia coal circles, of his resignation as sales manager of the Westmoreland Fuel Co., to form the **J. Earl Myers Co.,** with headquarters at Pittsburgh.

UTAH

A full course in coal mining is to be given at the **University of Utah.** This is the first time such a course has been available in the state. Prof. R. N. Lewis will be in charge of the course.

Alexander H. Cowle, general manager of the Utah Fuel Co., at Salt Lake City, for the past fifteen years, will be succeeded by **A. R. Baldwin.** Mr. Baldwin is president of the Western Pacific R.R., which is said to own all the stock of the coal company. The Utah Fuel is the oldest coal company in the state. It is believed that Mr. Baldwin's management of the company will be but temporary.

VIRGINIA

The Norfolk office of the **New River Coal Co.,** A. G. Ayers, manager, was closed Jan. 1. Mr. Ayers will go to the Richmond office of the company.

Arrangements have been made to keep open the Norfolk office of the **Central Pocahontas Coal Co.** This office was scheduled to have been closed in December.

WASHINGTON, D. C.

The United States Civil Service Commission announces an open competitive examination for statistician (financial). Vacancies in the Treasury Department, Washington, D. C., and in positions requiring similar qualifications, will be filled from this examination, unless it is found in the interest of the service to fill any vacancy by reinstatement, transfer or promotion. Receipt of applications to close Jan. 24, 1922.

In a recent speech in the House, Representative Black of Texas, said that wages must be adjusted in accordance with prices. He referred to the fact that groups of highly organized labor in the coal mines had resisted efforts to lower wages to any appreciable degree on the ground that labor is not a commodity and should not respond to conditions affecting commodity prices. The congressman, however, insisted that wages and profits are interwoven in the prices of commodities and should be adjusted.

Attorney General Daugherty has asked the attorney generals of the various states to co-operate with the Government in maintaining reasonable retail prices on fuel and foods. He urges enforcement of fuel supply laws, among others, in their relation to prices.

The Bureau of Standards in its annual report says that last year 231 coal mine scales were tested as to accuracy of weight, 177 of which were found incorrect. Fifty-seven per cent of the incorrect scales were in error more than 1 per cent and 7 per cent of the incorrect scales were in error more than 5 per cent. The Bureau allows a tolerance of .4 per cent.

WEST VIRGINIA

Equipment for the screening of coal on a larger scale has been arranged for by the **Opperman Coal Co.,** which operates near Blair on the Coal River branch of the Chesapeake & Ohio. This company will install a three-track shaker screen, together with picking tables and loading booms.

D. T. Quinn, who is identified with the Daniel Howard Interests in Clarksburg, has returned to his headquarters at Clarksburg after an extended Western trip.

J. E. Long of the J. E. Long Coal Co., of Clarksburg spent a week or more at French Lick Springs about the middle of December.

Joseph M. Burns, who has been connected with the firm of Daniel Howard & Co., at Clarksburg, has gone to Wichita Falls to assume charge of the office there of the Wilson Hydraulic Casing Pulley Machine Co., Daniel Howard and others of Clarksburg being financially interested in this company.

A. J. Salzer, general manager of the Southern Coal Corporation of Fairmont was in Pittsburgh and Ohio markets during the early part of December.

State Senator Gohen C. Arnold, of Buckhannon, interested in the Empire Fuel Co., was in Elkins, early in December in connection with the trial of a suit by the Empire Co. against the government.

The organization of the **Logan Coal & Lumber Co.,** has been perfected by the election of the following officers: Lee Ott, president; M. L. Garvey, vice-president; A. C. Minear, secretary and treasurer. The company plans the beginning of development work about the first of the year. It will be necessary for the company to build a bridge over the Guyan River. Operations will be in the Island Creek seam.

Negotiations have been consummated for the sale of two mining properties on Loop Creek in the New River field. **The Sugar Creek Coal & Coke Co.,** in which A. J. King of Huntington and his associates were the principal stockholders, has passed to the control of Theo. Deitz and associates of Charleston. This operation ranks as the second oldest on Loop Creek, the mine having been in operation for a quarter of a century. Operations will be in charge of Leslie Sydnor, who was formerly connected with one of the sales agencies at Huntington. The new name chosen following a change in ownership is the **Sugar Creek Coal Co.**

A lease of about 65 acres near Harvey, operated by the **Dewitt Fuel Co.,** has been acquired by **Thom. Clapperton** of Logan County, formerly of Winden and his associates, and operations will be under his personal direction. This property is a comparatively new one, having been first operated by Thomas Snyder, who sold it to Huntington men for approximately $100,000.

Sitting as arbitrators in the $200,000 damage suit of the **New River Collieries Co.,** against the **Sugar Creek Coal Co.,** Messrs. Cunningham and Thomas have awarded $12,096 to the plaintiffs. The arbitrators found that the Sugar Creek company in 1917 and 1918 trespassed, not intentionally nor deliberately, on the coal seam belonging to the Sun Mine and mined 3,531 tons of coal from the barrier pillars, the value of which has been fixed at $3,531. The arbitrators have further found that because of the removal of the barrier it will be necessary for the plaintiff to leave 4,230 tons of coal for new pillars the value of which has been fixed at $1,000. Concrete dams and walls to protect the Sun Mine from water are estimated as costing $7,025. The cost and expenses of the arbitration were $540, bringing the total amount to be paid the New River Collieries to $12,096. The finding of the arbitrators is final.

BRITISH COLUMBIA

OUTPUT FOR NOVEMBER, 1921

Vancouver Island District

	Tons
Canadian Western Fuel Co., Nanaimo	47,758
Canadian Collieries (D) Ltd.	
Comox	27,291
South Wellington	8,703
Extension	14,630
Nanoose Wellington Collieries	6,560
Granby Consolidated M. S. & P. Co.	22,663
Old Wellington (King & Foster)	371
Total	127,976

Nicola-Princeton District.

Middlesboro Collieries	4,991
Fleming Coal Co., Merritt	2,210
Coalmont Collieries, Coalmont	10,146
Princeton Coal & Land Co.	2,470
Total	19,817

Crow's Nest Pass District.

Crow's Nest Pass Coal Co.	
Coal Creek	45,102
Michel	31,703
Corbin Coal & Coke Co.	10,202
Total	87,007
Total for November	234,800

NOVA SCOTIA

D. H. McDougall, vice president of the British Empire Steel Corporation, denies that the proposed wage reduction of itself and its associates, effective Jan. 1, violates the industrial disputes act, declaring that notice of the reduction was sent Oct. 29 to the secretary of the union and published in the newspapers, and that in consequence ample notice had been given. The Montreal agreement under its terms ends Jan. 1.

ONTARIO

F. A. Fish, head of the F. A. Fish Coal Co., Toronto and Pittsburgh, who has been in charge of the Pittsburgh office since the death of the late manager there, spent Christmas with his family in Toronto.

David White, chief geologist of the United States Geological Survey, delivered a lecture on "The Origin of Coal and Petroleum," recently before the Royal Canadian Institute at Toronto.

Traffic News

The I. C. C. has given notice of its rejection of the supplement to freight rates of railroads operating between Utah and Pacific Coast points which would have reduced the tariff on bunker coal from $7,25 to $6 per ton from Utah mines to San Francisco and Oakland. The supplement was intended to aid in the efforts which are being made by Utah operators in regaining the harbor coal trade.

The I. C. C. has suspended from Dec. 24, 1921, until April 23, 1922, the operation of certain schedules published in Supplement No. 13 to **Missouri Pacific Railroad Co.,** tariff I. C. C. No. A-4891. The suspended schedules provide reductions in the rates on bituminous coal from mines on the Missouri Pacific in southern Illinois to destinations in Arkansas and Louisiana.

In the complaint of the **Refinite Co.,** an examiner recommends that the rates on pea, slack, and screenings coal from Acme, Alger, and Dietz, Wyo., to Ardmore, S. D., are unreasonable.

The Northwestern Traffic & Service Bureau of Minneapolis has complained against unreasonable rates on soft coal from Manitowoc and other Wisconsin points to points in Wisconsin, Minnesota, Iowa, the Dakotas and Nebraska.

The commission, on petition of various coal operators in Missouri, has reopened the case involving intrastate rates on coal in Missouri, and assigned it for hearing Jan. 6, at St. Louis.

In the complaint of the **Melcroft Coal Co.,** an I C. C. examiner recommends that the rates on coal from Melcroft, Pa., to Jersey City, for Erie delivery are unreasonable.

In the complaint of the **Walrath & Sherwood Lumber Co.,** an examiner recommends that the through rates on hard coal from Itasca, Wis., to Mt. Clare, Neb., and on coke from St. Louis, Woodward, Ala., and Youngstown, Ohio, to destinations in Nebraska are not unreasonable.

The Interstate Commerce Commisson has suspended schedules of the L. & N. and the C. & O. in which those carriers proposed to make reductions on coal from mines on their lines in eastern Kentucky and western west Virginia to destinations on the Southern in Indiana and Illinois, ranging from 17c. to 66c. per ton. The schedules have been suspended, pending inquiry, until April 24.

In the complaint of the **Illinois Coal Traffic Bureau,** the organization has submitted a brief to the I. C. C. requesting rates on bituminous coal from its southern Illinois mines to Omaha district territory which are made by use of a differential of 22½c. over the Belleville district rates. The railroads in a brief say this cannot be done unless the commission restores the whole differential basis in effect prior to the war increases. **The Lincoln Chamber of Commerce,** which has intervened in the case, asks for rates on fine coal from Illinois groups to Lincoln which do not exceed by more than 20c. a ton the rates to Omaha.

The United States Railroad Administration has reported the following final settlements with railroad companies: Nashville, Chattanooga & St. Louis Ry. $700,000; Woodstock & Blocton Ry. Co., $19,000; High Point, Randleman, Ashboro & Southern Ry. Co., $25,000. The payment of these claims on final settlement is largely made up of balance of compensation due, but includes all other disputed items as between the railroad companies and the administration during the twenty-six months of Federal control.

In the complaint of the **Milwaukee Association of Commerce,** relating to rates on hard and soft coal from Duluth and Superior as compared with those from Milwaukee, the I. C. C. has authorized the Central Illinois Coal Traffic Bureau, the Commerce Association of Aberdeen and the Minnesota Byproduct Coke Co. to intervene. The case will be heard by a representative of the commission at Milwaukee, Jan. 30.

The City of Detroit in a brief to the commission in its case asks for reparation on coal from Holden, W. Va., to Toledo, via barge to Detroit. The railroad contends there was no damage to the complainant and that the reduction in the rate from $2.11 to $1.83 does not justify an award of reparation.

In the complaint of the **West Kentucky Coal Bureau** the commission decides that the rates on bituminous coal from mines in western Kentucky on the Illinois Central and Kentucky Midland to points in the southern peninsula of Michigan are not unreasonable, but are prejudicial and prescribes that by March 18 the roads shall establish joint rates which do not exceed by more than 25c. a ton the rates maintained from mines on the Illinois Central in the southern Illinois group to the same destinations.

In the complaint of the **Mathieson Alkali Works, Inc.,** an examiner recommends that rates on coal from mines on the N. & W. in the Pocahontas, Thacker, Kenova and Clinch Valley districts, the C. C. & O. Ry., in the Clinchfield district and the Southern Ry., in the Black Mountain district to stations on the N. & W. and connecting branches between Roanoke, Va., and Bristol, Va.-Tenn. should be readjusted.

In the compaint of the **Lackawanna Steel Co.,** an examiner recommends that switching charges of $10.50 a car on bituminous slack coal during Federal control between mines and washing plants at Ellsworth, Cokesburg and Bentleyville, Pa., were unreasonable but that claims for reparation on certain shipments are barred by the statute of limitations. The examiner holds that the rate should have been $5 a car.

The Sewell Valley Railroad has been authorized to issue $110,000 of first mortgage 5 per cent gold bonds, to be sold for reimbursing T. W. Paine for advances made for the purchase of twenty-five coal cars.

Oral argument will be heard by the commission in Washington in January in the case involving reduced rates on coal to Kansas City, Mo.

The I. C. C. has assigned for hearing at Louisville on Jan. 18, the complaint of the **West Kentucky Coal Bureau.**

Recent Patents

Method and Apparatus for Washing Coal, Concentrating Ores and Minerals. Thomas M. Chance, Philadelphia, Pa., 1,392,399. Oct. 4, 1921. Filed Aug. 27, 1917; serial No. 188,430.

Method and Apparatus for Classifying Materials. Henry M. Chance, Philadelphia, Pa., and Thomas M. Chance, Baltimore, Md., 1,392,401. Oct. 4, 1921. Filed July 8, 1918; serial No. 243,911.

Mining-Machine Truck. Nils D. Levin, Columbus, Ohio, assignor to The Jeffrey Mfg. Co., Columbus, Ohio, 1,392,835. Oct. 4, 1921. Filed Nov. 21, 1916; serial No. 132,682.

Front Head for Rock Drills. L. C. Bayles, Easton, Pa., assignor to Ingersoll-Rand Co., Jersey City, N. J., 1,393,072. Oct. 11, 1921. Filed July 6, 1920; serial No. 394,193.

Hoisting and Conveying Machinery. Christian W. Aveling, Elgin, Ill., 1,395,077. Oct. 25, 1921. Filed Nov. 3, 1919; serial No. 335,431.

Obituary

David Pursglove, St. Clairsville, Ohio, 40 years old, one of the leading coal operators in eastern Ohio and West Virginia, is dead. He was found hanging by a rope in the cellar of his home. Despondency over ill health is believed to have prompted the act.

Charles A. Olson, president of the Olson & Van Allen Coal Co., Chicago, died recently at his home in Beverly Hills, near Chicago. He was 51 years of age. He had been prominent for years in Masonic circles.

Association Activities

Winding Gulf Operators' Association

Arrangements are being made for the annual meeting of the Winding Gulf Operators' Association, which is to be held at The Gueenbrien's White Sulphur Springs, on Jan. 10. At this meeting officers will be elected and other important business disposed of. Upon the conclusion of the business session a social meeting will be held in the nature of a luncheon. Men prominent in the life of the nation have been invited to be present and make addresses.

Northeast Kentucky Coal Association

The annual meeting of the association is to be held at the Ventura Hotel at Ashland, on Jan. 17, the business session to be followed by a banquet. A large attendance is expected. The principal address will be delivered by J. D. A. Morrow, vice-president of the National Coal Association. He is to speak on the value of associations to coal men. The association is lending its moral support to the program of good road building in northeast Kentucky, many of its members being identified with the Lonesome Pine Trail Association. The association is also backing the first-aid work in the state and is urging members to train first-aid teams to participate in the state contest next year.

Clarksburg Coal Club

At the last meeting of the Clarksburg Coal Club addresses were made by A. Lisle White of Clarksburg, Uncle Dan Howard of the same city, H. E. Smith and by Alfred Beam of Elk Garden. Mr. Beam described conditions existing on the Western Maryland in the Upper Potomac region, stating that a number of mines in the Elk Garden section had gone on an open-shop basis.

Coal Merchants' Association of New York

At the annual meeting of the association, held on Dec. 12 at 90 West St., N. L. Stokes was elected president; Henry J. Lange, vice-president and Joseph M. Vought, commissioner. Mr. Vought, who has been deputy commissioner of the association for several years, succeeds Arthur F. Rice who has been ill since early last January and is now in California recuperating.

Coming Meetings

American Wood Preservers' Association will hold its annual meeting on Jan. 24, 25 and 26 at the Hotel Sherman, Chicago, Ill. Secretary, G. M. Hunt, Madison, Wis.

American Institute of Electrical Engineers will hold its midwinter convention in New York City, Feb. 15, 16 and 17. Secretary, F. L. Hutchinson, 29 West 39th St., New York City.

American Institute of Mining and Metallurgical Engineers will meet on Feb. 20 to 23 in New York City. Secretary, F. F. Sharpless, 29 West 39th St., New York City.

The American Institute of Consulting Engineers, Inc., will hold its annual meeting Jan. 16, 1922, at the Engineers' Club, 32 West 40th St., New York City. Secretary F. A. Mollitor, 35 Nassau St., New York City.

New England Wholesale Coal Association will hold its annual meeting Jan. 10, 1922, at Boston, Mass. Secretary, R. S. Townsend, 27 Kilby St., Boston, Mass.

Southern Appalachian Coal Operators' Association will hold its next meeting Jan. 27, 1922, at Knoxville, Tenn. Secretary, J. E. McCoy, Knoxville, Tenn.

Pittsburgh Vein Operators' Association of Ohio will hold its annual meeting on Feb. 13, 1922, at Cleveland, Ohio; D. F. Hurd, secretary.